

**CITY OF NEWTON
PURCHASING DEPARTMENT**

CONTRACT FOR THE PUBLIC BUILDINGS DEPARTMENT

PROJECT MANUAL:

**UST VAULT COVER REPLACEMENT
AT THE MEMORIAL SPAULDING SCHOOL**

INVITATION FOR BID # 09-19

AUGUST 2008

David B. Cohen, Mayor

CITY OF NEWTON, MASSACHUSETTS

PURCHASING DEPARTMENT

purchasing@newtonma.gov

Fax (617) 796-1227

August 28, 2008

ADDENDUM #1

INVITATION FOR BID #09-19

UST VAULT COVER REPLACEMENT @ MEMORIAL SPAULDING

THIS ADDENDUM IS TO: Answer the following Question discussed at the pre-bid:

Q1. Is temporary fencing required for this project?

A1. Yes, refer to 01500 - 1.15

Q2. Is a manhole cover required over the tank?

A2. Yes. All structures within the slab to be demolished to be replaced in kind with H20 loading requirements.

Q3. Do the specifications call for the pipe, from the tank to the building, to be replaced?

A3. To the extent of repairs made necessary after demolition of the existing structures/slab.

Q4. Is there any paving or regrading required under this project?

A4. To the extent of restoring the areas adjacent to the work area to its' original condition.

All other terms and conditions of this bid remain unchanged

PLEASE ENSURE THAT YOU ACKNOWLEDGE THIS ADDENDUM ON YOUR BID FORM

Thank you.
Re Cappoli
Chief Procurement Officer

CITY OF NEWTON
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**CITY OF NEWTON
PURCHASING DEPARTMENT
INVITATION FOR BID No. 09-19**

The City of Newton invites sealed bids from Contractors for

UST VAULT COVER REPLACEMENT - MEMORIAL SPAULDING SCHOOL

Pre bid will be held at: **1:00 p.m., August 28, 2008, 250 Brookline St., Newton, MA ***

Bids will be received until: **1:00 p.m., September 5, 2008***

at the Purchasing Department, Room 204, Newton City Hall, 1000 Commonwealth Ave., Newton, MA 02459. Immediately following the deadline for bids all bids received within the time specified will be publicly opened and read aloud.

Contract documents will be available on line at: www.ci.newton.ma.us/bids or for pickup at the Purchasing Department after: **10:00 a.m., August 21, 2008***. There will be no charge for contract documents. Contract drawings will **not** be available on the website, and must be obtained through the Purchasing Department.

The work of this contract includes all labor, materials, and equipment required to complete the UST Vault Cover Replacement - Memorial Spaulding School as described within this project manual.

Time is of the essence for the work under this project. Work is expected to begin September 23, 2008 and shall be completed within 10 calendar days.

All bids shall be submitted as one ORIGINAL and one COPY.

Award will be made to the bidder with the lowest total contract price that has been deemed responsible and eligible.

All bids must be accompanied by a bid deposit in an amount that is not less than five percent (5%) of the value of the bid, including all add alternates. Bid deposits, payable to the City of Newton, shall be either in the form of a bid bond, or cash, or a certified check, or a treasurer's or cashier's check issued by, a responsible bank or trust company.

All bids are subject to the provisions of M.G.L. Chapter 30, Section 39M. **Wages are subject** to minimum wage rates determined by the Massachusetts Department of Labor and Industries pursuant to M.G.L. Chapter 149, Sec. 26 to 27H. The schedule of wage rates applicable to this contract is included in the bidding documents. The successful bidder will be required to provide a Certificate of Insurance demonstrating current coverage of the type and amounts set forth in the Project Manual. The successful bidder will be required to furnish a **Payment Bond in the amount of 50%** of the contract total.

Bidders attention is directed to the requirements of the City of Newton Supplemental Equal Employment Opportunity, Anti-Discrimination and Affirmative Action Program and also to the Minority/Women Business Enterprise Plan, December 1999, all of which are hereby incorporated into the Contract Documents. In the event of conflict between any of the above listed policies, the stricter policy shall apply.

Addenda's will be available online within the original bid document as well as a separate file. If you download bids from the internet site and would like to make it known that your company has done so, you may email us a purchasing@newtonma.gov or fax the Purchasing Dept. (617) 796-1227 with your NAME, ADDRESS, PHONE, FAX AND INVITATION FOR BID NUMBER.

The City of Newton reserves the right to waive any informalities in any or all bids, or to reject any or all bids, if it be in the public interest to do so.

CITY OF NEWTON

Re Cappoli
Chief Procurement Officer

August 21, 2008

****Dates have changed from what was originally advertised***

CITY OF NEWTON
DEPARTMENT OF PURCHASING
INSTRUCTIONS TO BIDDERS

ARTICLE 1 - BIDDER'S REPRESENTATION

- 1.1 Each General Bidder (hereinafter called the "Bidder") by making a bid (hereinafter called "bid") represents that:
1. The Bidder has read and understands the Contract Documents and the bid is made in accordance therewith.
 2. The Bidder has visited the site and is familiar with the local conditions under which the Work has to be performed.
- 1.2 Failure to so examine the Contract Documents and site will not relieve any Bidder from any obligation under the bid as submitted.

ARTICLE 2 - REQUEST FOR INTERPRETATION

- 2.1 Bidders shall promptly notify the City of any ambiguity, inconsistency, or error which they may discover upon examination of the Contract Documents, the site, and local conditions.
- 2.2 Bidders requiring clarification or interpretation of the Contract Documents shall make a written request to the *Chief Procurement Officer*, at purchasing@newtonma.gov or via facsimile (617) 796-1227. The City will answer such requests if received seven (7) calendar days before the date for receipt of the bids.
- 2.3 Interpretation, correction, or change in the Contract Documents will be made by Addendum which will become part of the Contract Documents. The City will not be held accountable for any oral instruction.
- 2.4 Addenda will be faxed or mailed First Class postage by the USPS, to every individual or firm on record as having taken a set of Contract Documents.
- 2.5 Copies of addenda will be made available for inspection at the location listed in the Invitation for Bids where Contract Documents are on file, in addition to being available online at www.ci.newton.ma.us/bids.
- 2.6 Bidders downloading information off the internet web site are solely responsible for obtaining any addenda prior to the bid opening. If the bidder makes themselves known to the Purchasing Dept., at purchasing@newtonma.gov or via facsimile (617) 796-1227, they shall be placed on the bidder's list. Bidders must provide the Purchasing Dept. with their company's name, street address, city, state, zip, phone, fax and **INVITATION FOR BID NUMBER 09-19**.

ARTICLE 3 - MBE PARTICIPATION

- 3.1 Notice is hereby given that the Mayor's Affirmative Action Plan for the City of Newton, dated December 1999 is applicable to all construction contracts in excess of \$10,000.00. A copy of this plan is on file at City of Newton Purchasing Department.
- 3.2 Notice is hereby given that the City of Newton Minority/Women Business Enterprise Plan dated December 1999 and the Supplemental Equal Employment Opportunity Anti-Discrimination and Affirmative Action Program is applicable to all City contracts for goods and services in excess of \$50,000.00. Copies of these plans are incorporated in the bidding documents.

ARTICLE 4 - PREPARATION AND SUBMISSION OF BIDS

- 4.1 Bids shall be submitted on the "Bid Form" as appropriate, furnished by the City.
- 4.2 All entries on the Bid Form shall be made by typewriter or in ink.
- 4.3 Where so indicated on the Bid Form, sums shall be expressed in both words and figures. Where there is a discrepancy between the bid sum expressed in words and the bid sum expressed in figures, the words shall control.

4.4 Bid Deposits shall be submitted in the amount specified in the Invitation for Bids. They shall be made payable to the City of Newton and shall be either in the form of cash, certified check, treasurer's or cashier's check issued by a responsible bank or trust company, or a bid bond issued by a surety licensed to do business in the Commonwealth of Massachusetts; and shall be conditioned upon the faithful performance by the principal of the agreements contained in the bid.

Bid deposits of the three (3) lowest responsible and eligible Bidders shall be retained until the execution and delivery of the Owner/Contractor agreement.

4.5 The Bid, including the bid deposit shall be enclosed in a sealed envelope with the following plainly marked on the outside:

* GENERAL BID FOR:

* NAME OF PROJECT AND **INVITATION NUMBER**

* **BIDDER'S NAME, BUSINESS ADDRESS, AND PHONE NUMBER**

4.6 Date and time for receipt of bids is set forth in the Invitation for Bids.

4.7 Timely delivery of a bid at the location designated shall be the full responsibility of the Bidder.

4.8 Bids shall be submitted with one **original** and one **copy**.

4.9 Be advised that a new Massachusetts law has been enacted that required all employees who work on Massachusetts public works construction sites must have no less than 10 hours of OSHA-approved safety and health training. See Chapter 306 of the Acts of 2004, which will become effective July 1, 2006.

1. This requirement will apply to any general bid or sub bid submitted on or after July 1, 2006 and to any contract awarded on or after July 1, 2006.
2. This law directs the Massachusetts Attorney General to restrain the award of construction contracts to any contractor who is in violation to this requirement and to restrain the performance of these contracts by non-complying contractors.
3. The contractor and all subcontractors on this project will be required to provide certification of compliance with this requirement. Non-compliance with this new Massachusetts Law will disqualify you from bidding on public contracts.

ARTICLE 5 - ALTERNATES

5.1 Each Bidder shall acknowledge Alternates (if any) in Section C on the Bid Form.

5.2 In the event an Alternate does not involve a change in the amount of the base bid, the Bidder shall so indicated by writing "No Change", or "N/C" or "0" in the space provided for that Alternate.

5.3 Bidders shall enter on the Bid Form a single amount for each Alternate which shall consist of the amount for work performed by the Contractor.

5.4 The low Bidder will be determined on the basis of the sum of the base bid and the accepted alternates.

ARTICLE 6 - WITHDRAWAL OF BIDS

6.1 Any bid may be withdrawn prior to the time designated for receipt of bids on written or telegraphic request. Telegraphic withdrawal of bids must be confirmed over the Bidder's signature by written notice postmarked on or before the date and time set for receipt of bids.

6.2 Withdrawn bids may be resubmitted up to the time designated for the receipt of bids.

6.3 No bids shall be withdrawn within thirty days, Saturdays, Sundays and legal holidays excluded, after the opening of the bids.

ARTICLE 7 - CONTRACT AWARD

7.1 The City of Newton will award the contract to the lowest eligible and responsible Bidder within thirty days, Saturdays, Sundays, and legal holidays excluded after the opening of bids.

- 7.2 The City of Newton reserves the right to waive any informalities in or to reject any or all Bids if it be in the public interest to do so.
- 7.3 As used herein, the term "lowest responsible and eligible Bidder" shall mean the Bidder (1) whose bid is the lowest of those bidders possessing the skill, ability and integrity necessary for the faithful performance of the work; (2) who shall certify that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work; (3) who, where the provisions of section eight B of chapter twenty-nine apply, shall have been determined to be qualified thereunder.
- 7.4 Subsequent to the award and within five (5) days, Saturday, Sundays and legal holidays excluded, after the prescribed forms are presented for signature, the successful Bidder shall execute and deliver to the City a Contract in the form included in the Contract Documents in such number of counterparts as the City may require.
- 7.5 In the event that the City receives low bids in identical amount from two or more responsive and responsible Bidders, the City shall select the successful Bidder by a blind selection process such as flipping a coin or drawing names from a hat. The low Bidders who are under consideration will be invited to attend and observe the selection process.

ARTICLE 8 - TAXES

- 8.1 The Bidder shall not include in this bid any tax imposed upon the sale or rental of tangible personal property in this Commonwealth, such as any and all building materials, supplies, services and equipment required to complete the work.
- 8.2 The City is exempt from payment of the Massachusetts Sales Tax, and the Bidder shall not include any sales tax on its bid. The City's exemption Number is E-046-001-404.

END OF SECTION

CITY OF NEWTON

GENERAL BID FORM 09-19

UST VAULT COVER REPLACEMENT - MEMORIAL SPAULDING SCHOOL

TO THE AWARDING AUTHORITY:

- A.** The undersigned proposes to furnish all labor and materials required for

UST VAULT COVER REPLACEMENT - MEMORIAL SPAULDING SCHOOL

in Newton, Massachusetts in accordance with the accompanying plans and specifications prepared by the City of Newton for the contract price specified below, subject to additions and deductions according to the terms of the specifications.

- B.** This bid includes addenda number(s) _____, _____, _____, _____, _____

- C.** The total contract price is:

_____ Dollars (\$ _____)

COMPANY: _____

- D.** The undersigned has completed and submits herewith the following documents:

- ☐ A five percent (5%) bid deposit/bid guarantee.
☐ Bidder's Qualifications and References Form (2 pages)

- E.** The undersigned agrees that, if s/he is selected as general contractor, s/he will within five days, Saturdays, Sundays and legal holidays excluded, after presentation thereof by the awarding authority, execute a contract in accordance with the terms of this bid and furnish a labor and materials or payment bond, each of a surety company qualified to do business under the laws of the commonwealth and satisfactory to the awarding authority and each in the sum of the contract price, the premiums for which are to be paid by the general contractor and are included in the contract price.

The undersigned hereby certifies that s/he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work and that s/he will comply fully with all laws and regulations applicable to awards made subject to section forty-four A of M.G.L. Chapter 30, s 39M.

The undersigned certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work; (2) that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration ("OSHA") that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of

successful completion of said course with the first certified payroll report for each employee; and (3) that all employees to be employed in the work subject to this bid have successfully completed a course in construction safety and health approved by the United States OSHA that is at least 10 hours in duration. The undersigned understands that any employee found on a worksite subject to this section without documentation of successful completion of a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration shall be subject to immediate removal.

The undersigned further certifies under the penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this subsection the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity. The undersigned further certifies under penalty of perjury that the said undersigned is not presently debarred from doing public construction work in the Commonwealth under the provisions of section twenty-nine F of chapter twenty-nine, or any other applicable debarment provisions of any other chapter of the General Laws or any rule or regulation promulgated thereunder.

Date _____

(Name of General Bidder)

BY: _____
(Signature)

(Printed Name and Title of Signatory)

(Business Address)

(City, State Zip)

_____/_____
(Telephone) (FAX)

(E-mail)

NOTE: If the bidder is a corporation, indicate state of incorporation under signature, and affix corporate seal; if a partnership, give full names and residential addresses of all partners; and if an individual, give residential address if different from business address.

END OF SECTION

CITY OF NEWTON

BIDDER'S QUALIFICATIONS AND REFERENCES FORM

All questions must be answered, and the data given must be clear and comprehensive. Please type or print legibly. If necessary, add additional sheet for starred items. This information will be utilized by the City of Newton for purposes of determining bidder responsiveness and responsibility with regard to the requirements and specifications of the Contract.

1. FIRM NAME: _____
2. WHEN ORGANIZED: _____
3. INCORPORATED? ☒ YES ☐ NO DATE AND STATE OF INCORPORATION: _____
- * 4. LIST ALL CONTRACTS CURRENTLY ON HAND, SHOWING CONTRACT AMOUNT AND ANTICIPATED DATE OF COMPLETION:

- * 5. HAVE YOU EVER FAILED TO COMPLETE A CONTRACT AWARDED TO YOU?
☐ YES ☐ NO
IF YES, WHERE AND WHY?

- * 6. HAVE YOU EVER DEFAULTED ON A CONTRACT? ☐ YES ☐ NO
IF YES, PROVIDE DETAILS.

- * 7. LIST YOUR VEHICLES/EQUIPMENT AVAILABLE FOR THIS CONTRACT:

- * 8. IN THE SPACES FOLLOWING, PROVIDE INFORMATION REGARDING CONTRACTS COMPLETED BY YOUR FIRM SIMILAR IN NATURE TO THE PROJECT BEING BID. A MINIMUM OF FOUR (4) CONTRACTS SHOULD BE LISTED. PUBLICLY BID CONTRACTS ARE PREFERRED, BUT NOT MANDATORY.

PROJECT NAME: _____
OWNER: _____
CITY/STATE: _____

DOLLAR AMOUNT: \$ _____ DATE COMPLETED: _____
PUBLICLY BID? ☐ YES ☐ NO
TYPE OF WORK?: _____
CONTACT PERSON: _____ TELEPHONE #: (____) _____
CONTACT PERSON'S RELATION TO PROJECT?: _____
(i.e., contract manager, purchasing agent, etc.)

PROJECT NAME: _____
OWNER: _____
CITY/STATE: _____
DOLLAR AMOUNT: \$ _____ DATE COMPLETED: _____
PUBLICLY BID? ☐ YES ☐ NO
TYPE OF WORK?: _____
CONTACT PERSON: _____ TELEPHONE #: (____) _____
CONTACT PERSON'S RELATION TO PROJECT?: _____
(i.e., contract manager, purchasing agent, etc.)

PROJECT NAME: _____
OWNER: _____
CITY/STATE: _____
DOLLAR AMOUNT: \$ _____ DATE COMPLETED: _____
PUBLICLY BID? ☐ YES ☐ NO
TYPE OF WORK?: _____
CONTACT PERSON: _____ TELEPHONE #: (____) _____
CONTACT PERSON'S RELATION TO PROJECT?: _____
(i.e., contract manager, purchasing agent, etc.)

PROJECT NAME: _____
OWNER: _____
CITY/STATE: _____
DOLLAR AMOUNT: \$ _____ DATE COMPLETED: _____
PUBLICLY BID? ☐ YES ☐ NO
TYPE OF WORK?: _____
CONTACT PERSON: _____ TELEPHONE #: (____) _____
CONTACT PERSON'S RELATION TO PROJECT?: _____
(i.e., contract manager, purchasing agent, etc.)

9. The undersigned certifies that the information contained herein is complete and accurate and hereby authorizes and requests any person, firm, or corporation to furnish any information requested by the City of Newton in verification of the recitals comprising this statement of Bidder's qualifications and experience.

DATE: _____ BIDDER: _____

SIGNATURE: _____

PRINTED NAME: _____ TITLE: _____

END OF SECTION

CONTRACT FORMS

The forms are provided for informational purposes only.

The awarded bidder will be required to complete and submit the following documents in order to execute a contract pursuant to this bid.

None of the following forms are required at the time of bid submittal.

CITY-CONTRACTOR AGREEMENT

CONTRACT NO. C-

THIS AGREEMENT made this _____ day of _____ in the year Two Thousand and Eight by and between the CITY OF NEWTON, a municipal corporation organized and existing under the laws of the Commonwealth of Massachusetts, hereinafter referred to as the CITY, acting through its Chief Procurement Officer, but without personal liability to him, and

hereinafter referred to as the CONTRACTOR.

The parties hereto for the consideration hereinafter set forth agree as follows:

ARTICLE 1. STATEMENT OF WORK. The Contractor shall furnish all labor, materials, and equipment and perform all work required in strict accordance with the Contract Documents for the following project:

UST VAULT COVER REPLACEMENT - MEMORIAL SPAULDING SCHOOL

ARTICLE 2. TIME OF COMPLETION. The Contractor shall commence work under this Contract on the date specified in the written notice of the City to proceed and shall fully complete all work hereunder within the time stated, 30 calendar days, in the contract documents.

ARTICLE 3. THE CONTRACT PRICE. The City shall pay the Contractor for the full and satisfactory performance of the Contract, in current funds the sum of:

(\$)

ARTICLE 4. CONTRACT DOCUMENTS. The Contract Documents consist of the following documents which are either attached to this Agreement or are incorporated herein by reference:

- a. This CITY-CONTRACTOR Agreement;
- b. The City's Invitation For Bid #09-19 issued by the Purchasing Department;
- c. The Project Manual for **UST Vault Cover Replacement - Memorial Spaulding School** including the Instructions to Bidders; General Conditions; Special Conditions; MWBE/AA Requirements, Wage Rate Requirements and Wage Rate Schedule(s); The Supplementary Special Conditions; General Requirements and Project Specifications; and Drawings, if included or referenced therein;
- d. Addenda Number(s) _____ ;
- e. The Bid Response of the CONTRACTOR submitted for this Project and accompanying documents and certifications;
- f. Certificate(s) of Insurance and surety bond(s) submitted by the CONTRACTOR in connection with this Project;
- g. Duly authorized and executed Amendments, Change Orders or Work Orders issued by the CITY after execution of this CITY-CONTRACTOR Agreement.

This CITY-CONTRACTOR Agreement, together with the other documents enumerated in this Article, constitute the entire Agreement between the CITY and the CONTRACTOR.

ARTICLE 5. ALTERNATES. The following Alternates have been accepted and their costs are included in the Contract Price stated in Article 3 of this Agreement:

Alternates: N/A

ARTICLE 6. APPLICABLE STATUTES. All applicable federal, state and local laws and regulations are incorporated herein by reference and the Contractor agrees to comply with same.

IN WITNESS WHEREOF, the parties have caused this instrument to be executed under seal the day and year first above written.

CONTRACTOR

By _____

Title _____

Date _____

Affix Corporate Seal here

City funds in the amount of _____ are
available in account number
98550690-52407

I further certify that the Mayor
is authorized to execute contracts
and approve change orders

By _____

Comptroller of Accounts

Date _____

CITY OF NEWTON

By _____

Chief Procurement Officer

Date _____

By _____

Commissioner of Parks & Recreation

Date _____

Approved as to Legal Form and Character

By _____

Associate City Solicitor

Date _____

CONTRACT AND BONDS APPROVED

By _____

David B. Cohen, Mayor

Date _____

CERTIFICATE OF AUTHORITY - CORPORATE

1. I hereby certify that I am the Clerk/Secretary of _____
(insert full name of Corporation)
2. Corporation, and that _____
(insert the name of officer who signed the **contract and bonds.**)
3. is the duly elected _____
(insert the title of the officer in line 2)
4. of said corporation, and that on _____
(insert a date that is ***ON OR BEFORE*** the date the officer signed the **contract and bonds.**)

at a duly authorized meeting of the Board of Directors of said corporation, at which all the directors were present or waived notice, it was voted that

5. _____ the _____
(insert **name** from line 2) (insert **title** from line 3)

of this corporation be and hereby is authorized to execute contracts and bonds in the name and on behalf of said corporation, and affix its Corporate Seal thereto, and such execution of any contract of obligation in this corporation's name and on its behalf, with or without the Corporate Seal, shall be valid and binding upon this corporation; and that the above vote has not been amended or rescinded and remains in full force and effect as of the date set forth below.

6. ATTEST: _____ *AFFIX CORPORATE
(Signature of **Clerk or Secretary**)* SEAL HERE*
7. Name: _____
(Please print or type name in line 6)*
8. Date: _____
(insert a date that is ***ON OR AFTER*** the date the officer signed the **contract and bonds.**)

* The name and signature inserted in lines 6 & 7 **must** be that of the **Clerk or Secretary** of the corporation.

ATTESTATION

Pursuant to MG c. 62C, § 49A, the undersigned acting on behalf of the Contractor, certifies under the penalties of perjury that, to the best of the undersign's knowledge and belief, the Contractor is in compliance with all laws of the Commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting child support.*

**Signature of Individual
or Corporate Contractor (Mandatory)

*** Contractor's Social Security Number
(Voluntary) or Federal Identification Number

By: _____
Corporate Officer
(Mandatory, if applicable)

Date: _____

* The provision in the Attestation relating to child support applies only when the Contractor is an individual.

** Approval of a contract or other agreement will not be granted unless the applicant signs this certification clause.

*** Your social security number will be furnished to the Massachusetts Department of Revenue to determine whether you have met tax filing or tax payment obligations. Providers who fail to correct their non-filing or delinquency will not have a contract or other agreement issued, renewed, or extended. This request is made under the authority of GL c. 62C, § 49A.

CITY OF NEWTON, MASSACHUSETTS

PAYMENT BOND

Know All Men By These Presents:

That we, _____ Shorten or lengthen as necessary _____, as PRINCIPAL, and _____ leave enough room for Bond Co. name _____, as SURETY, are held and firmly bound unto the City of Newton as Obligee, in the sum of drop to the next line if necessary dollars (\$ _____) to be paid to the Obligee, for which payments well and truly to be made, we bind ourselves, our respective heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

Whereas, the said PRINCIPAL has made a contract with the Obligee, bearing the date of May 20, 2008, for the construction of _____ in Newton, Massachusetts.
(Project Title)

Now, the conditions of this obligation are such that if the PRINCIPAL and all Sub-contractors under said contract shall pay for all labor performed or furnished and for all materials used or employed in said contract and in any and all duly authorized modifications, alterations, extensions of time, changes or additions to said contract that may hereafter be made, notice to the SURETY of such modifications, alterations, extensions of time, changes or additions being hereby waived, the foregoing to include any other purposes or items set out in, and to be subject to, provisions of M.G.L. c. 30, sec. 39A, and M.G.L. c. 149 sec. 29, as amended, then this obligation shall become null and void; otherwise it shall remain in full force, virtue and effect.

In Witness Whereof, the PRINCIPAL and SURETY have hereto set their hands and seals this ____ day of _____ 2008.

PRINCIPAL

SURETY

BY _____
(SEAL)

BY _____
(ATTORNEY-IN-FACT) (SEAL)

(Title)

ATTEST: _____

ATTEST: _____

ATTEST: _____

ATTEST: _____

CITY OF NEWTON

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

1.0 DEFINITIONS

1.1 THE CONTRACT DOCUMENTS

The term "Contract Documents" sometimes also referred to as the "Contract", means the contract entered into between the City of Newton (hereinafter "City") and the Contractor. It includes the Invitation for Bid, General Bid Form, Contract Form, these General Conditions of the Contract, Supplements and Amendments to the General Conditions (if any), Contract Specifications, Drawings, all addenda issued prior to execution of the contract, the Bid Bond, the Labor and Material Payment Bond, or other assurances of completion, the applicable wage rate determinations, and other documents listed in the Agreement and modifications issued after execution of the contract.

1.2 THE WORK

The term "Work", sometimes also referred to as the "Project", means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligation.

1.3 OWNER

The term "Owner" is the City of Newton.

1.4 CONTRACT OFFICER

The terms "Contract Officer" or "Project Manager" means the person appointed by the Owner to administer the terms of the Contract between the Owner and the Contractor, who is also empowered to take certain actions under this Agreement.

1.5 CONTRACTOR

1.5.1 The Contractor, sometimes referred to as the General Contractor, is the person or entity identified as such throughout the Contract Documents as if singular in number. The term Contractor means the Contractor or its authorized representative.

1.5.2 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures, and for coordinating all portions of the Work under the Contract.

1.6 SUBSTANTIAL COMPLETION

The term "Substantial Completion" means the value of the work remaining to be performed by the Contractor is, in the estimate of the awarding authority, less than one percent (1%) of the original contract price.

2.0 CONTRACT ADMINISTRATION

2.1 PRE-CONSTRUCTION CONFERENCE

2.1.1 Prior to commencement of the Work, the Contractor shall meet in conference with representatives of the Owner regarding the Owner's requirements under the Contract for administration of the quality assurance program, safety program, labor provisions, the schedule of work, and other Contract procedures.

2.1.2 The Contractor shall begin work upon receipt of a written Notice to Proceed from the Contract Officer or designee. The Contractor shall not begin work prior to receiving such notice.

2.2 CONTRACT PERIOD

The Contractor shall complete all work required under this contract within the timeframe specified elsewhere in this document, or within the time schedule established in the notice to proceed issued by the Contracting Officer.

2.3 REJECTION OF DEFECTIVE MATERIALS AND WORK

The Owner's inspection of the Work shall not relieve the Contractor of any of its responsibilities to fulfill the Contract obligations, and defective work shall be corrected without cost to the Owner. Unsuitable work may be rejected by the Owner, notwithstanding that such work and materials have been previously overlooked or misjudged by the Owner and accepted for payment. If the Work or any part thereof shall be found defective at any time before the final acceptance of the whole Work, the Contractor shall forthwith correct such defect in a manner satisfactory to the Owner, and if any material brought upon the site for use in the Work, or selected for the same, shall be rejected by the Owner as unsuitable or not in conformity with the Contract requirements, the Contractor shall forthwith remove such materials from the vicinity of the Work.

2.4 CHANGES

2.4.1 All changes in the work including any increase, decrease, or other equitable adjustment in the Contract price or in the time for performing the Contract, shall be authorized in writing by the Owner and/or Contract Officer prior to commencement.

2.5 PAYMENTS

2.5.1 CONTRACT PRICE

The Contract Price is stated in the Contract Form, and including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

2.6 APPLICATIONS FOR PAYMENT

2.6.1 Once each month, on a date established by the Owner at the beginning of the Work, the Contractor shall deliver to the Owner an itemized Application for Payment, supported by such data substantiating the Contractor's right to payment as the Owner may require, and reflecting a minimum of 5% retainage until the final acceptance and payment by the Owner.

2.6.2 The Owner shall make payment to the Contractor within 15 days of receipt of said application, less any applicable retainage.

2.6.3 The Owner may make changes in any application for payment submitted by the Contractor for:

- i. Retention based on the value of its claims against the Contractor,
- ii. Retention of 5% of the approved amount of the Application for Payment.

2.7 FINAL PAYMENT

The acceptance by the Contractor of the last payment due under this Contract or the execution of the Final Certificate of Completion, shall operate as a release to the Owner from all claims and liability related to this Contract.

2.8 GUARANTY AND WARRANTY

2.8.1 WARRANTY

The Contractor warrants to the Owner that materials and equipment furnished under the Contract will be of good quality and new unless otherwise required or permitted by the Contract Documents, that the Work will be free from defects not inherent in the quality required or permitted, and that the Work will conform with the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. If required by the Owner, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

2.8.2 GENERAL GUARANTY

If at any time during the period of one (1) year from the date of Substantial Completion of the Work to be performed under this Contract, any part of the Work shall, in the reasonable determination of the Owner, require replacing or repairing due to the fact that it is broken, defective, or otherwise does not conform to the Contract Documents, the Owner will notify the Contractor to make the required repairs or replacement. If the Contractor shall neglect to commence such repairs or replacement to the satisfaction of the Owner within ten (10) days from the date of giving or mailing such notice, then the Owner may employ other persons to make the same. The Contractor agrees, upon demand, to pay to the Owner all amounts which the Owner expends for such repairs or replacements. During this one year guarantee period any corrective work shall be performed in accordance with the applicable terms of this Contract. For items of work completed after use and occupancy has been taken, the one year guarantee shall commence at the time the Owner accepts such items. This one year guarantee shall not limit any express guaranty or warranty provided elsewhere in the Contract.

2.9 INSURANCE REQUIREMENTS

2.9.1 The Contractor shall provide insurance coverage as listed below. This insurance shall be provided at the Contractor's expense and shall be in full force and effect during the full term of this Contract.

WORKER'S COMPENSATION

Worker's Compensation: Per M.G.L. c.. 149, s. 34 and c.. 152 as amended.

COMMERCIAL GENERAL LIABILITY

Personal Injury	\$500,000 each occurrence \$1,000,000 aggregate
Property Damage	\$500,000 each occurrence \$1,000,000 aggregate

VEHICLE LIABILITY

Personal Injury	\$500,000 each person \$1,000,000 aggregate
Property Damage	\$300,000

2.9.2 OWNER AS CO-INSURED

The Owner shall be named as additional insureds on the Contractor's Liability Policies.

2.9.3 CERTIFICATES OF INSURANCE, POLICIES

- i. The Contractor shall not commence the work until proof of compliance with this Section 2.9 has been furnished to the Owner by submitting one copy of a properly endorsed insurance certificate issued by a company authorized to write insurance in the Commonwealth. This certificate shall indicate that the contractual liability coverage is in force.
- ii. The Contractor shall file the original and one certified copy of all policies with the Owner within fifteen (15) days after contract award. If the Owner is damaged by the Contractor's failure to maintain such insurance and to so notify the Owner, then the Contractor shall be responsible for all reasonable costs attributable thereto.

2.9.4 CANCELLATION

Cancellation of any insurance required by this contract, whether by the insurer or the insured, shall not be valid unless written notice thereof is given by the party proposing cancellation to the other party and Owner at least thirty days prior to the effective date thereof, which shall be expressed in said notice.

2.10 INDEMNIFICATION

The Contractor shall take all responsibility for the Work and take all precautions for preventing injuries to persons and property in or about the Work; shall bear all losses resulting to or on account of the amount or character of the Work. The Contractor shall pay or

cause payment to be made for all labor performed or furnished and for all materials used or employed in carrying out this Contract. The Contractor shall assume the defense of, and indemnify and save harmless the Owner, and the Owner's officers and agents from all claims relating to labor performed or furnished and materials used or employed for the Work; to inventions, patents and patent rights used in and in doing the Work unless such patent infringement is due to a product or process specified by the Owner; to injuries to any person or corporation received or sustained by or from the Contractor and any employees, and subcontractors and employees, in doing the work, or in consequence of any improper materials, implements or labor used or employed therein; and to any act, omission or neglect of the Contractor and any employees therein.

2.11 BONDS

The Contractor shall provide the Owner with a performance and with a payment or labor and materials bond in the form provided by the Owner, executed by a surety company licensed by the Commonwealth of Massachusetts' Division of Insurance. Such bond shall be in an amount equal to at least one half of the Contract price unless otherwise stated in the Contract Documents. All bonds shall be accompanied by a current power of attorney.

2.12 TERMINATION

2.12.1 TERMINATION FOR CAUSE

- i. The Owner may terminate this contract for cause if it determines that any of the following circumstances have occurred:
 - a. The Contractor is adjudged bankrupt or has made a general assignment for the benefit of its creditors.
 - b. A receiver has been appointed of the Contractor's property.
 - c. All or a part of the Work has been abandoned.
 - d. The Contractor has sublet or assigned all or any portion of the Work, the Contract, or claims thereunder, without the prior written consent of the Owner, except as provided in the Contract.
 - e. The Owner has determined that the rate of progress required on the project is not being met.
 - f. The Contractor has substantially violated any provisions of this Contract.
- ii. The Owner may complete the Work, or any part thereof, and charge its expense of so completing the Work or part thereof, to the Contractor.
- iii. The Owner may take possession of and use any materials, machinery, implements and tools found upon the site of said Work. The Owner shall not be liable for any depreciation, loss or damage to said materials, machinery, implements or tools during said use and the Contractor shall be solely responsible for their removal from the Project site after the Owner has no further use for them.

2.12.2 TERMINATION - NO FAULT

- i. In the event that this Contract is terminated by the Owner, prior to the completion of construction and termination is not based on a reason listed in Paragraph 2.12.1, the Contractor shall be compensated for its costs incurred on the Project, including reasonable costs of de-mobilization, covering the period of time between the last approved application for payment and the date of termination.
- ii. Payment by the Owner pursuant to Section 2.7 shall be considered to fully compensate the Contractor for all claims and expenses and those of any consultants, subcontractors, and suppliers, directly or indirectly attributable to the termination, including any claims for lost profits.

2.13 PERMITS, FEES, AND NOTICES

- 2.13.1 The Contractor shall secure and the Owner shall pay for the building permit, if required. The Contractor shall coordinate all efforts required to obtain this permit. All other permits and governmental fees, licenses, and inspections necessary for proper execution and completion of the Work shall be secured and paid for by the Contractor.
- 2.13.2 The Contractor shall comply with and give notices required by laws, ordinances rules, regulations, and lawful orders of public authorities bearing on performance of the Work.

- 2.13.3 If the Contractor performs Work that it knows or reasonably should know is contrary to laws, statutes, ordinances, building codes, and rules and regulations without such notice to the Owner, the Contractor shall assume full responsibility for such Work and shall bear the attributable costs.

2.14 SAFETY REQUIREMENTS

- 2.14.1 The Contractor shall comply with all Federal, State, and local safety laws and regulations applicable to the Work performed under this Contract.

2.15 TEMPORARY HEATING

Not required; do not install UST VAULT COVER REPLACEMENT - MEMORIAL SPAULDING SCHOOL in any space which is not heated properly.

2.16 AVAILABILITY AND USE OF UTILITY SERVICES

- 2.16.1 The City shall make all reasonably required amounts of utilities available to the Contractor from existing outlets and supplies, as specified in the Contract. Unless otherwise provided in the Contract, the amount of each utility service consumed shall be charged to or paid for by the Contractor at prevailing rates charged to the City or, where the utility is produced by the City, at reasonable rates determined by the Contracting Officer. The Contractor shall carefully conserve any utilities furnished without charge.

2.17 DISPUTES

- 2.17.1 "Claim," as used in this section, means a written demand or written assertion by one of the contracting parties seeking, as a matter of right, the payment of money in a sum certain, the adjustment or interpretation of contract terms, or other relief arising under or relating to the contract. A claim arising under the Contract, unlike a claim relating to the Contract, is a claim that can be resolved under a Contract clause that provides for the relief sought by the claimant. A voucher, invoice, or other routine request for payment that is not in dispute when submitted is not a claim. The submission may be converted to a claim by complying with the requirements of this section, if it is disputed either as to liability or amount or is not acted upon in a reasonable time.
- 2.17.2 All disputes arising under or relating to this Contract, including any claims for damages for the alleged breach thereof which are not disposed of by agreement, shall be resolved under this section.
- 2.17.3 All claims by the Contractor shall be made in writing and submitted to the Contract Officer for a written decision. A claim by the City against the Contractor shall be subject to a written decision by the Contract Officer.
- 2.17.4 The Contract Officer shall, within thirty (30) days after receipt of the request, decide the claim or notify the Contractor of the date by which the decision will be made.
- 2.17.5 The Contract Officer's decision shall be final unless the Contractor files suit in a court of competent jurisdiction. Such appeal must be made within One hundred Twenty (120) days after receipt of the Contract Officer's decision.
- 2.17.6 The Contractor shall proceed diligently with performance of this Contract and/or any authorized change thereof, pending final resolution of any request for relief, claim, appeal, or action arising under or relating to the Contract and/or any authorized change thereof, and comply with any decision of the Contract Officer.

2.18 LIQUIDATED DAMAGES

- 2.18.1 If the Contractor fails to complete the Work within the time specified in the contract, or any extension thereof, the Contractor shall pay to the City as liquidated damages, the sum of \$50.00 for each day of delay. Completion dates are specified in the Contract for separate phases of the work, and the amount of liquidated damages shall be assessed on each and every phase which is delayed. In the context of this paragraph, "delay" means failure to provide UST VAULT COVER REPLACEMENT - MEMORIAL SPAULDING SCHOOL on the date required by Contractor, who is the Owner's Contractor. To the extent that the Contractor's delay or nonperformance is excused under another section in this Contract, liquidated damages shall not be due the City. The Contractor remains liable for damages caused other than by delay.

2.18.2 If the City terminates the Contractor's right to proceed pursuant to section 2.12.1, the resulting damage will consist of liquidated damages until such reasonable time as may be required for final completion of the Work together with any increased costs to the City in completing the Work.

2.18.3 If the City does not terminate the Contractor's right to proceed, the resulting damage will consist of liquidated damages until the Work is completed or accepted.

3.0 SALES TAX EXEMPTION AND OTHER TAXES

3.0.1 To the extent that materials and supplies are used or incorporated in the performance of this Contract, the Contractor is considered an exempt purchaser under the Massachusetts Sales Act, Chapter 14 of the Acts of 1966.

3.0.2 The Contractor shall be responsible for paying all other taxes and tariffs of any sort, related to the Work.

3.1 PROHIBITION AGAINST LIENS

The Contractor is prohibited from placing a lien on the City's property. This prohibition shall apply to all subcontractors at any tier and all materials suppliers.

3.2 ORDER OF PRECEDENCE

In the event of a conflict between these General Conditions and the Specifications, the General Conditions shall prevail. In the event of a conflict between these General Conditions and the Supplementary Special Conditions, the Supplementary Special Conditions shall prevail. In the event of a conflict between the Contract and any applicable state or local law or regulation, the state or local law or regulation shall prevail; provided that such state or local law or regulation does not conflict with, or is less restrictive than applicable federal law, regulation, or Executive Order. In the event of such a conflict, applicable federal law, regulation, and Executive Order shall prevail.

3.3 EXAMINATION AND RETENTION OF CONTRACTOR'S RECORDS

The City of Newton shall, until three (3) years after final payment under this Contract, have access to and the right to examine any of the Contractor's directly pertinent books, documents, papers, or other records involving transactions related to this Contract for the purpose of making audit, examination, excerpts, and/or transcriptions.

END OF SECTION

SPECIAL CONDITIONS - COMMONWEALTH OF MASSACHUSETTS & CITY OF NEWTON

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SPECIAL CONDITIONS - COMMONWEALTH OF MASSACHUSETTS

Article 1. METHOD OF PAYING SUBCONTRACTORS

(General Laws, Chapter 30, Section 39F as most recently amended by Chapter 450, §76 of the Acts of 1996)

(1.) Every contract awarded pursuant to section forty-four A to L, inclusive, of chapter one hundred and forty-nine shall contain the following subparagraphs (a) through (i) and every contract awarded pursuant to section thirty-nine M of chapter thirty shall contain the following subparagraphs (a) through (h) and in each case those subparagraphs shall be binding between the general contractor and each subcontractor.

(a) Forthwith after the general contractor receives payment on account of a periodic estimate, the general contractor shall pay to each subcontractor the amount paid for the labor performed and the materials furnished by the subcontractor, less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the subcontractor by the general contractor.

(b) Not later than the sixty-fifth day after each subcontractor substantially completes his work in accordance with the plans and specifications, the entire balance due under the subcontract less amounts retained by the awarding authority as the estimated cost of completing the incomplete and unsatisfactory items of work, shall be due the subcontractor; and the awarding authority shall pay that amount to the general contractor. The general contractor shall forthwith pay to the subcontractor the full amount received from the awarding authority less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the subcontractor by the general contractor.

(c) Each payment made by the awarding authority to the general contractor pursuant to subparagraphs (a) and (b) of this paragraph for the labor performed and the materials furnished by a subcontractor shall be made to the general contractor for the account of that subcontractor, and the awarding authority shall take reasonable steps to compel the general contractor to make each such payment to each such subcontractor. If the awarding authority has received a demand for direct payment from a subcontractor for any amount which has already been included in a payment to the general contractor or which is to be included in a payment to the general contractor for payment to the subcontractor as provided in subparagraphs (a) and (b), the awarding authority shall act upon the demand as provided in this section.

(d) If, within seventy days after the subcontractor has substantially completed the subcontract work, the subcontractor has not received from the general contractor the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor, less any amount retained by the awarding authority as the estimated cost of completing the incomplete and unsatisfactory items of work, the subcontractor may demand direct payment of the balance from the awarding authority. The demand shall be by a sworn statement delivered to or sent by certified mail to the awarding authority, and a copy shall be delivered to or sent by certified mail to the general contractor at the same time. The demand shall contain a detailed breakdown of the balance due under the subcontract and also a statement of the status of completion of the subcontract work. Any demand made after substantial completion of the subcontract work shall be valid even if delivered or mailed prior to the seventieth day after the subcontractor has substantially completed the subcontract work. Within ten days after the subcontractor has delivered or so mailed the demand to the awarding authority and delivered or so mailed a copy to the general contractor, the general contractor may reply to the demand. The reply shall be by a sworn statement delivered to or sent by certified mail to the awarding authority and a copy shall be delivered to or sent by certified mail to the subcontractor at the same time. The reply shall contain a detailed breakdown of the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor and of the amount due for each claim made by the general contractor against the subcontractor.

(e) Within fifteen days after receipt of the demand by the awarding authority, but in no event prior to the seventieth day after substantial completion of the subcontract work, the awarding authority shall make direct payment to the subcontractor of the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor, less any amount (i) retained by the awarding authority as the estimated cost of completing the incomplete or unsatisfactory items of work, (ii) specified in any court proceedings barring such payment, or (iii) disputed by the general contractor in the sworn reply; provided, that the awarding authority shall not deduct from a direct payment any amount as provided in part (iii) if the reply is not sworn to, or for which the sworn reply does not contain the detailed breakdown required by subparagraph (d). The awarding authority shall make further direct payments to the subcontractor forthwith after the removal of the basis for deductions from direct payments made as provided in parts (i) and (ii) of this subparagraph.

(f) The awarding authority shall forthwith deposit the amount deducted from a direct payment as provided in part (iii) of subparagraph (e) in an interest-bearing joint account in the names of the general contractor and the subcontractor in a bank in Massachusetts selected by the awarding authority or agreed upon by the general contractor and the subcontractor and shall notify the general contractor and the subcontractor of the date of the deposit and the bank receiving the deposit. The bank shall pay the amount in the account, including

accrued interest, as provided in an agreement between the general contractor and the subcontractor or as determined by a decree of a court of competent jurisdiction.

(g) All direct payments and all deductions from demands for direct payments deposited in an interest-bearing account for accounts in a bank pursuant to subparagraph (f) shall be made out of amounts payable to the general contractor at the time of receipt of a demand for direct payment from a subcontractor and out of amounts which later become payable to the general contractor and in the order of receipt of such demands from subcontractors. All direct payments shall discharge the obligation of the awarding authority to the general contractor to the extent of the such payment.

(h) The awarding authority shall deduct from payments to a general contractor amounts which, together with the deposits in interest-bearing accounts pursuant to subparagraph (f), are sufficient to satisfy all unpaid balances of demands for direct payment received from subcontractors. All such amounts shall be earmarked for such direct payments, and the subcontractors shall have a right in such deductions prior to any claims against such amounts by creditors of the general contractor.

(i) If the subcontractor does not receive payment as provided in subparagraph (a) or if the general contractor does not submit a periodic estimate for the value of the labor or materials performed or furnished by the subcontractor and the subcontractor does not receive payment for same when due less the deductions provided for in subparagraph (a), the subcontractor may demand direct payment by following the procedure in subparagraph (d) and the general contractor may file a sworn reply as provided in that same subparagraph. A demand made after the first day of the month following that for which the subcontractor performed or furnished the labor and materials for which the subcontractor seeks payment shall be valid even if delivered or mailed prior to the time payment was due on a periodic estimate from the general contractor. Thereafter the awarding authority shall proceed as provided in subparagraph (e), (f), (g) and (h).

Article 2. METHOD OF PAYING GENERAL CONTRACTORS

(General Laws, Chapter 30, Section 39K as most recently amended by Chapter 145 of the Acts of 1991 and Chapter 151 of the Acts of 1993.)

Every contract for the construction, reconstruction, alteration, remodeling, repair or demolition of any public building by the commonwealth, or by any county, city, town, district, board, commission or other public body, when the amount is more than five thousand dollars in the case of the commonwealth and more than two thousand dollars in the case of any county, city, town, district, board, commission or other public body, shall contain the following paragraph:--Within fifteen days (forty-five days in the case of the commonwealth, including local housing authorities) after receipt from the contractor, at the place designated by the awarding authority if such a place is so designated, of a periodic estimate requesting payment of the amount due for the preceding month, the awarding authority will make a periodic payment to the contractor for the work performed during the preceding month and for the materials not incorporated in the work but delivered and suitably stored at the site (or at some location agreed upon in writing) to which the contractor has title or to which a subcontractor has title and has authorized the contractor to transfer title to the awarding authority, less (1) a retention based on its estimate of the fair value of its claims against the contractor and less (2) a retention for direct payments to subcontractors based on demands for same in accordance with the provisions of section thirty-nine F, and less (3) a retention not exceeding five per cent of the approved amount of the periodic payment. After the receipt of a periodic estimate requesting final payment and within sixty-five days after (a) the contractor fully completes the work or substantially completes the work so that the value of the work remaining to be done is, in the estimate of the awarding authority, less than one per cent of the original contract price, or (b) the contractor substantially completes the work and the awarding authority takes possession for occupancy, whichever occurs first, the awarding authority shall pay the contractor the entire balance due on the contract less (1) a retention based on its estimate of the fair value of its claims against the contractor and of the cost of completing the incomplete and unsatisfactory items of work and less (2) a retention for direct payments to subcontractors based on demands for same in accordance with the provisions of section thirty-nine F, or based on the record of payments by the contractor to the subcontractors under this contract if such record of payment indicates that the contractor has not paid subcontractors as provided in section thirtynine F. If the awarding authority fails to make payment as herein provided, there shall be added to each such payment daily interest at the rate of three percentage points above the rediscount rate then charged by the Federal Reserve Bank of Boston commencing on the first day after said payment is due and continuing until the payment is delivered or mailed to the contractor; provided, that no interest shall be due, in any event, on the amount due on a periodic estimate for final payment until fifteen days (twenty-four days in the case of the commonwealth) after receipt of such a periodic estimate from the contractor, at the place designated by the awarding authority if such a place is so designated. The contractor agrees to pay to each subcontractor a portion of any such interest paid in accordance with the amount due each subcontractor.

The awarding authority may make changes in any periodic estimate submitted by the contractor and the payment due on said periodic estimate shall be computed in accordance with the changes so made, but such changes or any requirement for a corrected periodic estimate shall not affect the due date for the periodic payment or the date for the commencement of interest charges on the amount of

the periodic payment computed in accordance with the changes made, as provided herein; provided, that the awarding authority may, within seven days after receipt, return to the contractor for correction, any periodic estimate which is not in the required form or which contains computations not arithmetically correct and, in that event, the date of receipt of such periodic estimate shall be the date of receipt of the corrected periodic estimate in proper form and with arithmetically correct computations. The date of receipt of a periodic estimate received on a Saturday shall be the first working day thereafter. The provisions of section thirty-nine G shall not apply to any contract for the construction, reconstruction, alteration, remodeling, repair or demolition of any public building to which this section applies.

All periodic estimates shall be submitted to the awarding authority, or to its designee as set forth in writing to the contractor, and the date of receipt by the awarding authority or its designee shall be marked on the estimate. All periodic estimates shall contain a separate item for each filed subtrade and each sub-subtrade listed in sub-bid form as required by specifications and a column listing the amount paid to each subcontractor and sub-subcontractor as of the date the periodic estimate is filed. The person making payment for the awarding authority shall add the daily interest provided for herein to each payment for each day beyond the due date based on the date of receipt marked on the estimate.

A certificate of the architect to the effect that the contractor has fully or substantially completed the work shall, subject to the provisions of section thirty-nine J, be conclusive for the purposes of this section.

Article 3. CLAIMS FOR UNFORESEEN CONDITIONS

(General Laws, Chapter 30, Section 39N as most recently amended by Chapter 774 of the Acts of 1972)

Every contract subject to section forty-four A of chapter one hundred and forty-nine or subject to section thirty-nine M of chapter thirty shall contain the following paragraph in its entirety and an awarding authority may adopt reasonable rules or regulations in conformity with that paragraph concerning the filing, investigation and settlement of such claims:

If, during the progress of the work, the contractor or the awarding authority discovers that the actual subsurface or latent physical conditions encountered at the site differ substantially or materially from those shown on the plans or indicated in the contract documents either the contractor or the contracting authority may request an equitable adjustment in the contract price of the contract applying to work affected by the differing site conditions. A request for such an adjustment shall be in writing and shall be delivered by the party making such claim to the other party as soon as possible after such conditions are discovered. Upon receipt of such a claim from a contractor, or upon its own initiative, the contracting authority shall make an investigation of such physical conditions, and, if they differ substantially or materially from those shown on the plans or indicated in the contract documents or from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the plans and contract documents and are of such a nature as to cause an increase or decrease in the cost of performance of the work or a change in the construction methods required for the performance of the work which results in an increase or decrease in the cost of the work, the contracting authority shall make an equitable adjustment in the contract price and the contract shall be modified in writing accordingly.

Article 4. CLAIMS FOR DELAY

(General Laws, Chapter 30, Section 39O as added by Chapter 116 of the Acts of 1973)

Every contract subject to the provisions of section thirty-nine M of this chapter or subject to section forty-four A of chapter one hundred forty-nine shall contain the following provisions (a) and (b) in their entirety and, in the event a suspension, delay, interruption or failure to act of the awarding authority increases the cost of performance to any subcontractor, that subcontractor shall have the same rights against the general contractor for payment for an increase in the cost of his performance as provisions (a) and (b) give the general contractor against the awarding authority, but nothing in provisions (a) and (b) shall in any way change, modify or alter any other rights which the general contractor or the subcontractor may have against each other.

(a) The awarding authority may order the general contractor in writing to suspend, delay, or interrupt all or any part of the work for such period of time as it may determine to be appropriate for the convenience of the awarding authority; provided however, that if there is a suspension, delay or interruption for fifteen days or more or due to a failure of the awarding authority to act within the time specified in this contract, the awarding authority shall make an adjustment in the contract price for any increase in the cost of performance of this contract but shall not include any profit to the general contractor on such increase; and provided further, that the awarding authority shall not make any adjustment in the contract price under this provision for any suspension, delay, interruption or failure to act to the extent that such is due to any cause for which this contract provides for an equitable adjustment of the contract price under any other contract provisions.

(b) The general contractor must submit the amount of a claim under provision (a) to the awarding authority in writing, as soon as practicable after the end of the suspension, delay, interruption of failure to act and, in any event, not later than the date of final payment under this contract and, except for costs due to a suspension order, the awarding authority shall not approve any costs in the claim incurred more than twenty days before the general contractor notified the awarding authority in writing of the act of failure to act involved in the claim.

Article 5. DECISIONS AND APPROVALS BY ENGINEER OR ARCHITECT

(General Laws, Chapter 30, Section 39P, as added by Chapter 1164 of the Acts of 1973)

Every contract subject to section thirty-nine M of this chapter or section forty-four A of chapter one hundred forty-nine which requires the awarding authority, any official, its architect or engineer to make a decision on interpretation of the specifications, approval of equipment, material or any other approval, or progress of the work, shall require that the decision be made promptly and, in any event, no later than thirty days after the written submission for decision; but if such decision requires extended investigation and study, the awarding authority, the official, architect or engineer shall, within thirty days after the receipt of the submission, give the party making the submission written notice of the reasons why the decision cannot be made within the thirty day period and the date by which the decision will be made.

Article 6. PREFERENCE IN EMPLOYMENT, WAGES

(General Laws, Chapter 149 Section 26 as most recently amended by Chapter 665 of the Acts of 1986 and Chapter 552 of the Acts of 1991).

In the employment of mechanics and apprentices, teamsters, chauffeurs and laborers in the construction of public works by the commonwealth, or by a county, town or district, or by persons contracting or subcontracting for such works, preference shall first be given to citizens of the commonwealth who have been residents of the commonwealth for at least six months at the commencement of their employment who are male veterans as defined in clause Forty-third of section seven of chapter four, and who are qualified to perform the work to which the employment relates; and secondly, to citizens of the commonwealth generally who have been residents of the commonwealth for at least six months at the commencement of their employment, and if they cannot be obtained in sufficient numbers, then to citizens of the United States, and every contract for such work shall contain a provision to this effect. Each county, town or district in the construction of public works, or persons contracting or subcontracting for such works, shall give preference to veterans and citizens who are residents of such county, town or district. The rate per hour of the wages paid to said mechanics and apprentices, teamsters, chauffeurs and laborers in the construction of public works shall not be less than the rate or rates of wages to be determined by the commissioner as hereinafter provided; provided, that the wages paid to laborers employed on said works shall not be less than those paid to laborers in the municipal service of the town or towns where said works are being constructed; provided, further, that where the same public work is to be constructed in two or more towns, the wages paid to laborers shall not be less than those paid to laborers in the municipal service of the town paying the highest rate; provided, further, that if, in any of the towns where the works are to be constructed, a wage rate or wage rates have been established in certain trades and occupations by collective agreements or understandings in the private construction industry between organized labor and employers, the rate or rates to be paid on said works shall not be less than the rates so established, provided, further that in towns where no such rate or rates have been so established, the wages paid to mechanics and apprentices, teamster, chauffeurs and laborers on public works, shall not be less than the wages paid to the employees in the same trades and occupations by private employers engaged in the construction industry. This section shall also apply to regular employees of the commonwealth or of a county, town or district, when such employees are employed in the construction, addition to or alteration of public buildings for which special appropriation of more than One Thousand Dollars are provided. Payments by employers to health and welfare plans, pension plans and supplementary unemployment benefit plans under collective bargaining agreements or understandings between organized labor and employers shall be included for the purpose of establishing minimum wage rates as herein provided.

Article 7. HOURS OF WORK

(General Laws, Chapter 149 Section 34 as most recently amended by Chapter 552 of the Acts of 1991).

Every contract, except for the purchase of material or supplies, involving the employment of laborers, workmen, mechanics, foremen or inspectors, to which the commonwealth or any county or town, subject to section thirty, is a party, shall contain a stipulation that no laborer, workman, mechanic, foreman or inspector working within the commonwealth, in the employ of the contractor, subcontractor or other person doing or contracting to do the whole or a part of the work contemplated by the contract, shall be required or permitted to work more than eight hours in any one day or more than forty-eight hours in any one week, or more than six days in any one week, except in case of emergency, or, in case any town subject to section thirty-one is a party to such a contract, more than eight hours in

any one day, except as aforesaid, provided, that in contracts entered into by the department of highways for the construction or reconstruction of highways there may be inserted in said stipulation a provision that said department, or any contractor or subcontractor for said department, may employ laborers, workmen, mechanics, foremen and inspectors for more than eight hours in any one day in such construction or reconstruction when, in the opinion of the commissioner of labor and industries, public necessity so requires. Every such contract not containing the aforesaid stipulation shall be null and void.

Article 8. WORK BY FOREIGN CORPORATIONS

(General Laws, Chapter 30 Section 39L, as most recently amended by Chapter 3 of the Acts of 1967).

The Commonwealth and every county, city, town, district, board, commission or other public body which, as the awarding authority, requests proposals, bids or subbids for any work in the construction, reconstruction, alteration, remodeling, repair or demolition of any public building or other public works (1) shall not enter into a contract for such work with, and shall not approve as a subcontractor furnishing labor and materials for a part of any such work, a foreign corporation which has not filed with such awarding authority a certificate of the state secretary stating that such corporation has complied with sections three and five of chapter one hundred and eighty-one and the date of such compliance, and (2) shall report to the state secretary and to the department of corporations and taxation any foreign corporation performing work under such contract or subcontract, and any person, other than a corporation, performing work under such contract or subcontract, and residing or having a principal place of business outside the Commonwealth.

END OF SECTION

SUPPLEMENTARY SPECIAL CONDITIONS

The following provisions supplement the General Conditions of the Contract. In the event of conflict or discrepancy between the General Conditions and these Supplementary Special Conditions, the provisions of the Supplementary Special Conditions shall govern.

1.0 SUMMARY OF WORK

A. The Work under the Contract consists of:

1. Furnishing all labor, materials, tools, equipment and supervision necessary to accomplish the work described herein, in accordance with all specifications and requirements of the Project Manual.
2. All work either shown on the Drawings (if any) or included in the specifications unless specifically indicated as not to be done.

B. In addition, the work under the Contract includes:

1. Work outside the Project Site as called for in the Contract Documents and as required for the performance of the Work.
2. The restoration of any items damaged or destroyed by encroaching upon areas outside the Project Site.
3. Providing and restoring, where appropriate, all temporary facilities.

C. The Proposed Contract Price shall be complete costs, including overhead, profit, insurance, transportation, and all other costs connected with, or incidental to, the work described.

2.0 PROJECT SITE

A. Memorial Spaulding School, 250 Brookline Street., Newton, MA

3.0 NOTICE TO PROCEED/FAILURE TO COMMENCE WORK

A. In the event of Contractor's failure to commence work within the time required by these specifications, the City shall exercise all provisions contained in the General Conditions regarding default, suspension or termination of this contract.

4.0 PAYMENT

A. Upon receipt of the Application for Payment, the City will, within fifteen days, make payment in full for Work completed and accepted during the preceding month, less a retainage of 5% of the estimated total. The City will make final payment for completed Work, including any retained amounts, upon completion and acceptance of the Work and receipt of an Application for Payment at the end of the month in which the Work is completed and accepted.

5.0 COMMUNICATIONS

A. All notices, demands, requests, instructions, approvals and claims must be in writing.

B. Any such notice shall be deemed to have been given as of the time of delivery, or of actual receipt in the case of telegrams or, in the case of mailing, when it should have been received in due course of post.

C. For communicating purposes, the office address of the Contractor shall be that stated on the signature page of the contract; that of the City shall be as stated in the Invitation for Bids. Any subsequent change in address of either party shall be communicated to the other in writing.

6.0 PLANS AND SPECIFICATIONS

- A. The City will furnish to the Contractor, without charge, all copies of the plans and specifications reasonably necessary in the performance of the contract work.

7.0 COORDINATION

The Contractor shall:

- A. Supply to the City the name and telephone number of a responsible person who may be contacted during off-hour emergencies during the term of the Contract.
- B. Cooperate at all times with the City and the Project Manager, and ensure the cooperation of his key personnel and that of his subcontractors.

8.0 CONDUCT OF THE WORK

- A. The work must be completed in a continuous uninterrupted operation. The Contractor must use sufficient workforce and adequate equipment to complete all the necessary work requirements within a minimum period of time.
- B. See Specifications for information regarding work hours and work days.
- C. Under no circumstances will the contractor be paid at a premium or overtime rate for any work performed without the express advance authorization of the City.
- D. The Contractor is responsible for the security of partially completed work until the project is finally accepted by the City.

9.0 ALTERATION

- A. The Contractor shall patch, repair and/or replace all existing materials and surfaces remaining exposed after installation of new work which have been affected by alteration or removal of existing work. All patch and repair work shall match existing.

10.0 GENERAL DIRECTIONS

- A. Damage to Persons and Property

Any damage to buildings, roads, public roads, bituminous concrete areas, fences, lawn areas, trees, shrubbery, electric or telephone poles, underground utilities, etc., shall be repaired by the Contractor at his own expense. Damaged property shall be returned to its original condition prior to the damages within a reasonable time period, except all utility outages shall be repaired immediately.

- B. Protection of Persons and Property

The Contractor shall, at all times, leave an unobstructed way along the roadways and walks, and shall maintain barriers and lights for the protection of all persons and property in all locations where he has materials stored or work going on, and during the entire time such work is going on or material is stored.

- C. Shutdown of Services

The Contractor's attention is especially called to the fact that continuous operation of building utilities and services is mandatory. During the period of construction of the new work and/or alterations to the existing work, the progress and sequence of installation shall be carefully planned and approved by the City. If any building is to be left without heat, hot water, city water, electricity, gas, sanitary facilities, or any other services, the Contractor shall provide reasonable written notice to the City before proceeding.

- D. Care of Work

All work is to be carefully protected so that no injury will come to it from water, frost, accident, or any other cause and any injury which may come to any of the work shall be repaired immediately by the Contractor at his own expense and without additional cost to the City. This shall also apply to any abutting or adjoining work on premises. The Contractor shall be responsible for any damage and in the event of such damage, the Contractor shall repair the damage immediately at his own cost and without additional cost to the City.

E. Removal of Debris

Debris of any nature shall be completely removed from the site at the end of each days work and disposed of in accordance with all Federal, State and local regulations.

F. The Contractor is responsible for the security of all work until it is accepted by the City.

11.0 TEMPORARY UTILITIES

- A. Prior to execution of the Work, the Contractor shall confer with a representative of the Public Building Department regarding the use of utilities and facilities at the worksite. No City utilities or facilities are to be used by the Contractor in the performance of this Contract without the prior approval of the City.

12.0 SUBMISSION OF PAYROLLS

- A. The Contractor shall, with each invoice submitted during the term of this Contract, submit to the City two (2) legible copies of his payrolls documenting the wages paid to all employees performing on site labor relating to the work of this Contract. These copies shall be prepared on forms supplied by the City.

13.0 DRAWINGS

- A. The drawings attached herein and such drawings as may be issued per addendum, shall constitute an integral part of this section and shall serve as the working drawings.
- B. Drawings shall not be scaled. Field verification is directed since actual locations, dimensions and levels are existing.
- C. All items not specifically mentioned in the specifications or noted on the drawings, but which are obviously necessary to make a complete working installation, shall be included.

14.0 MATERIALS

- A. Unless specifically so stated to the contrary the use of a manufacturer's name or style number is not restrictive, and is intended solely as an identification of the type and quality of the materials and services required. In all cases, the words "or approved equal" if not inserted are implied.
- B. An item equal to that named or described in the specifications may upon written approval of the City be furnished by the Contractor. An item shall be considered equal to the item so named or described if (1) it is at least equal in quality, durability, appearance, strength and design; (2) it will perform at least equally the function imposed by the general design for the public work being contracted for or the material being purchased; (3) it conforms substantially, even with deviations, to the detailed requirements for the item in the specifications.
- C. The name and identification of all materials other than the one specifically named shall be submitted to the City in writing for approval, prior to purchase, use or fabrication of such items. Approval shall be at the sole discretion of the City, shall be in writing to be effective, and the decision of the City shall be final. The City may require tests of all materials so submitted to establish quality standards at the Contractor's expense.
- D. For the use of material other than the one specified, the Contractor shall assume the cost of and responsibility for satisfactorily accomplishing all changes that may be required in the work as shown. All directions, specifications and recommendations by manufacturers for the installation, handling, storing, adjustment, and operation of their equipment shall be complied with and responsibility for proper performance shall continue to rest with the Contractor.

- E. The Contractor shall not have any right of appeal from the decision of the City condemning any materials furnished if the Contractor fails to obtain the approval for substitution in accordance with these provisions. If any substitutuin is more costly, the Contracotr shall pay for such costs

15.0 WARRANTY AND INDEMNIFICATION

- A. In addition to other guarantees or warranties required under law or other sections of the specification, the Contractor warrants all materials furnished and labor performed under this Contract to be free from defects or errors in workmanship or installation for a period of one year from the date of Completion of the work, as certified by the Project Manager. The Contractor shall indemnify the Authority for the full cost of any damage to the property that may result by reason of such defects or errors and shall indemnify the Authority from and against any and all claims, demands, losses, costs, expenses, liabilities and damages, including reasonable attorney's fees and expenses, arising out of or on account of this Contract, including but not limited to claims brought against the Authority for alleged infringement of patents based upon any methods of construction or application of materials furnished under the Contract.
- B. The Contractor shall indemnify, hold harmless and defend the City and its departments, officers, employees, servants, and agents from and against all actions, causes of actions, claims, demands, damages, costs, loss of services, expenses and compensation, including attorney's fees and interest arising out of or resulting directly or indirectly from the services rendered pursuant to this Contract, provided that any such action, cause of action, claim, demand, damage, cost, loss of service, expense, compensation (1) in any way grows out of bodily injury, sickness, disease or death, or to injury to or destruction of tangible property, which (2) is caused in whole or in part by any act or omission of the Contractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder.

END OF SECTION

CITY OF NEWTON

WAGE RATE REQUIREMENTS

1. GENERAL

- A.** This section summarizes the requirements for the payment of wages to laborers and mechanics employed under the Contract.
- B.** Other duties and requirements of law which may not be specified in this section apply and are inherently part of the Contract.

2. WAGE RATES

- A.** The rate per hour to be paid to mechanics, apprentices, teamsters, chauffeurs, and laborers employed on the Work shall not be less than the rate of wages in the attached "Minimum Wage Rates" as determined by the Commissioner of Labor and Industries. This schedule shall continue to be the minimum rate of wages for said employees during the life of this Contract.
- B.** Keep posted on the site a legible copy of said schedule. Keep on file the wage rates and classifications of labor employed on this Work in order that they may be available for inspection by the Owner, Administrator, or the Architect.
- C.** Apprentices employed pursuant to this determination of wage rates must be registered and approved by the State Apprenticeship Council wherever rates for journeymen or apprentices are not listed.
- D.** Pay reserve police officers employed on the Work the prevailing rate of wages paid to regular police officers as required by M.G.L. c 149, Sec. 34B, as amended. Such police officers shall be covered by Workmen's Compensation Insurance and Employers Liability Insurance by the Contractor.
- E.** The Contractor and all subcontractors shall, on a weekly basis throughout the term of the contract, provide to the City of Newton certified payroll affidavits verifying compliance with M.G.L. c.149, Sec. 27, 27A and 27B.
- F.** The Contractor and all subcontractors shall provide a Statement of Compliance within 15 days of the completion of its portion of the work. This statement shall be submitted to the Owner on the form found elsewhere in this section.
- G.** The Contractor shall maintain accurate and complete records, including payroll records, during the Contract term and for three years thereafter. Filings made by the Contractor pursuant to Clauses 47, 48 and 49 of the General Conditions shall be deemed to constitute compliance with State filing requirements under the Massachusetts Prevailing Wage Law.

END OF SECTION



DEVAL L. PATRICK
Governor
TIMOTHY F. MURRAY
Lt. Governor

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT
DIVISION OF OCCUPATIONAL SAFETY

Prevailing Wage Rates

As determined by the Commissioner under the provisions of the
Massachusetts General Laws, Chapter 149, Sections 26 to 27H



GEORGE NOEL
Director
LAURA M. MARLIN
Commissioner

Awarding Authority: CITY OF NEWTON

Contract Number: 0919

City/Town: NEWTON

Description Of Work: MEML SPAULDING SCHOOL TANK/V AULT REPLACEMENT WORK

Job Location: VARIOUS

Classification	Effective Dates and Total Rates					
(2 AXLE) DRIVER - EQUIPMENT	6/1/2008	\$41.310	12/1/2008	\$42.260		
(3 AXLE) DRIVER - EQUIPMENT	6/1/2008	\$41.380	12/1/2008	\$42.330		
(4 & 5 AXLE) DRIVER - EQUIPMENT	6/1/2008	\$41.500	12/1/2008	\$42.450		
AD S/SUBMERSIBLE PILOT	8/1/2008	\$97.960	8/1/2009	\$102.480	8/1/2010	\$107.410
AIRTRACK OPERATOR	6/1/2008	\$44.850	12/1/2008	\$45.850	6/1/2009	\$46.850
	6/1/2010	\$48.850	12/1/2010	\$50.100	6/1/2011	\$51.100
					12/1/2011	\$52.350
ASBESTOS REMOVER - PIPE /MECH. EQUIPT.	12/1/2007	\$34.400				
ASPHALT RAKER	6/1/2008	\$44.350	12/1/2008	\$45.350	6/1/2009	\$46.350
	6/1/2010	\$48.350	12/1/2010	\$49.600	6/1/2011	\$50.600
					12/1/2011	\$51.850
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE	6/1/2008	\$55.410	12/1/2008	\$56.390	6/1/2009	\$57.500
	6/1/2010	\$59.870	12/1/2010	\$61.120		
BACKHOE/FRONT-END LOADER	6/1/2008	\$55.410	12/1/2008	\$56.390	6/1/2009	\$57.500
	6/1/2010	\$59.870	12/1/2010	\$61.120		
BARCO-TYPE JUMPING TAMPER	6/1/2008	\$44.350	12/1/2008	\$45.350	6/1/2009	\$46.350
	6/1/2010	\$48.350	12/1/2010	\$49.600	6/1/2011	\$50.600
					12/1/2011	\$51.850
BLOCK PAVER, RAMMER / CURB SETTER	6/1/2008	\$44.850	12/1/2008	\$45.850	6/1/2009	\$46.850
	6/1/2010	\$48.850	12/1/2010	\$50.100	6/1/2011	\$51.100
					12/1/2011	\$52.350
BOILERMAKER	10/1/2007	\$53.390	10/1/2008	\$55.740		
BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING)	8/1/2008	\$64.630	2/1/2009	\$65.320	8/1/2009	\$67.120
	8/1/2010	\$69.910	2/1/2011	\$70.900	8/1/2011	\$73.000
					2/1/2012	\$73.990
BULLDOZER/GRADER/SCRAPER	6/1/2008	\$55.110	12/1/2008	\$56.070	6/1/2009	\$57.180
	6/1/2010	\$59.520	12/1/2010	\$60.770		
CAISSON & UNDERPINNING BOTTOM MAN	5/31/2008	\$44.300				
CAISSON & UNDERPINNING LABORER	5/31/2008	\$43.350				
CAISSON & UNDERPINNING TOP MAN	5/31/2008	\$43.350				
CARBIDE CORE DRILL OPERATOR	6/1/2008	\$44.350	12/1/2008	\$45.350	6/1/2009	\$46.350
	6/1/2010	\$48.350	12/1/2010	\$49.600	6/1/2011	\$50.600
					6/1/2012	\$51.850
CARPENTER	3/1/2008	\$50.470	9/1/2008	\$51.620	3/1/2009	\$52.770
CEMENT MASONRY/PLASTERING	8/1/2008	\$63.360	1/1/2009	\$63.580	2/1/2009	\$64.110
	2/1/2010	\$66.200	8/1/2010	\$67.670	2/1/2011	\$68.440
	2/1/2012	\$70.830			8/1/2011	\$70.060
CHAIN SAW OPERATOR	6/1/2008	\$44.350	12/1/2008	\$45.350	6/1/2009	\$46.350
	6/1/2010	\$48.350	12/1/2010	\$49.600	6/1/2011	\$50.600
					12/1/2011	\$51.850
CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES	6/1/2008	\$55.410	12/1/2008	\$56.390	6/1/2009	\$57.500
	6/1/2010	\$59.870	12/1/2010	\$61.120		
COMPRESSOR OPERATOR	6/1/2008	\$45.620	12/1/2008	\$46.340	6/1/2009	\$47.160
	6/1/2010	\$48.900	12/1/2010	\$49.830		
DELEADER (BRIDGE)	7/1/2008	\$60.060	1/1/2009	\$61.210	7/1/2009	\$62.360
DEMO: ADZEMAN	5/31/2008	\$43.350			1/1/2010	\$63.510
DEMO: BACKHOE/LOADER/HAMMER OPERATOR	5/31/2008	\$44.350				

This wage schedule must be posted at the work site in accordance with M.G.L. ch. 149, sec. 27

Failure of the employer to pay "prevailing wage rates," which are the minimum wage rates listed above, on public works projects is a violation of M.G.L. ch. 149, sec. 27B. Employees not receiving such rates should report the violation to the Office of Fair Labor and Business Practices, 100 Cambridge Street, Boston, MA 02108; Tel: 617-727-3465.

Issue Date: 8/1/2008

Rate Sheet: NEWTON

Job ID: 122486

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DEVAL L. PATRICK
Governor
TIMOTHY F. MURRAY
Lt. Governor

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT
DIVISION OF OCCUPATIONAL SAFETY

Prevailing Wage Rates

As determined by the Commissioner under the provisions of the
Massachusetts General Laws, Chapter 149, Sections 26 to 27H



GEORGE NOEL
Director
LAURA M. MARLIN
Commissioner

Awarding Authority: CITY OF NEWTON

Contract Number: 0919

City/Town: NEWTON

Description Of Work: MEML SPAULDING SCHOOL TANK/V AULT REPLACEMENT WORK

Job Location: VARIOUS

Classification	Effective Dates and Total Rates				
DEMO: BURNERS	5/31/2008	\$44.100			
DEMO: CONCRETE CUTTER/SAWYER	5/31/2008	\$44.350			
DEMO: JACKHAMMER OPERATOR	5/31/2008	\$44.100			
DEMO: WRECKING LABORER	5/31/2008	\$43.350			
DIRECTIONAL DRILL MACHINE OPERATOR	6/1/2008	\$55.110	12/1/2008	\$56.070	6/1/2009 \$57.180 12/1/2009 \$58.280
	6/1/2010	\$59.520	12/1/2010	\$60.770	
DIVER	8/1/2008	\$72.590	8/1/2009	\$75.600	8/1/2010 \$78.890 8/1/2011 \$82.740
DIVER TENDER	8/1/2008	\$58.090	8/1/2009	\$60.240	8/1/2010 \$62.590 8/1/2011 \$65.340
DIVER TENDER (EFFLUENT)	8/1/2008	\$76.210	8/1/2009	\$79.440	8/1/2010 \$82.960 8/1/2011 \$87.090
DIVER/SLURRY (EFFLUENT)	8/1/2008	\$97.960	8/1/2009	\$102.480	8/1/2010 \$107.410 8/1/2011 \$113.190
ELECTRICIAN	3/1/2008	\$61.570	9/1/2008	\$62.800	3/1/2009 \$64.040 9/1/2009 \$65.280
	3/1/2010	\$66.510	9/1/2010	\$67.750	3/1/2011 \$68.990
ELEVATOR CONSTRUCTOR	1/1/2007	\$58.730			
ELEVATOR CONSTRUCTOR HELPER	1/1/2007	\$44.990			
FENCE & GUARD RAIL ERECTOR	6/1/2008	\$44.350	12/1/2008	\$45.350	6/1/2009 \$46.350 12/1/2009 \$47.350
	6/1/2010	\$48.350	12/1/2010	\$49.600	6/1/2011 \$50.600 12/1/2011 \$51.850
FIELD ENG. - INST. PERSON (BLDG, SITE, HVY CONST)	5/1/2008	\$53.060			
FIELD ENG. - ROD PERSON (BLDG, SITE, HVY CONST)	5/1/2008	\$39.320			
FIELD ENG.-CHIEF OF PARTY (BLDG, SITE, HVY CONST)	5/1/2008	\$54.400			
FIRE ALARM INSTALLER	3/1/2008	\$61.570	9/1/2008	\$62.800	3/1/2009 \$64.040 9/1/2009 \$65.280
	3/1/2010	\$66.510	9/1/2010	\$67.750	3/1/2011 \$68.990
FIRE ALARM REPAIR / MAINTENANCE	3/1/2008	\$50.070	9/1/2008	\$51.000	3/1/2009 \$51.920 9/1/2009 \$52.860
	3/1/2010	\$53.780	9/1/2010	\$54.700	3/1/2011 \$55.640
FIREMAN (ASST. ENGINEER)	6/1/2008	\$50.090	12/1/2008	\$50.920	6/1/2009 \$51.870 12/1/2009 \$52.830
	6/1/2010	\$53.900	12/1/2010	\$54.980	
FLAGGER & SIGNALER	6/1/2008	\$38.200	12/1/2008	\$39.200	6/1/2009 \$40.200 12/1/2009 \$41.200
	6/1/2010	\$42.200	12/1/2010	\$43.450	6/1/2011 \$44.450 12/1/2011 \$45.700
FLOORCOVERER	3/1/2008	\$56.080	9/1/2008	\$57.250	3/1/2009 \$58.420
FORKLIFT/CHERRY PICKER	6/1/2008	\$55.410	12/1/2008	\$56.390	6/1/2009 \$57.500 12/1/2009 \$58.620
	6/1/2010	\$59.870	12/1/2010	\$61.120	
GENERATOR/LIGHTING PLANT/HEATERS	6/1/2008	\$45.620	12/1/2008	\$46.340	6/1/2009 \$47.160 12/1/2009 \$47.980
	6/1/2010	\$48.900	12/1/2010	\$49.830	
GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS)	7/1/2008	\$49.560	1/1/2009	\$50.710	7/1/2009 \$51.860 1/1/2010 \$53.010
HOISTING ENGINEER/CRANES/GRADALLS	6/1/2008	\$55.410	12/1/2008	\$56.390	6/1/2009 \$57.500 12/1/2009 \$58.620
	6/1/2010	\$59.870	12/1/2010	\$61.120	
HVAC (DUCTWORK)	8/1/2008	\$60.330	2/1/2009	\$61.450	8/1/2009 \$62.700 2/1/2010 \$63.950
HVAC (ELECTRICAL CONTROLS)	3/1/2008	\$61.570	9/1/2008	\$62.800	3/1/2009 \$64.040 9/1/2009 \$65.280
	3/1/2010	\$66.510	9/1/2010	\$67.750	3/1/2011 \$68.990

This wage schedule must be posted at the work site in accordance with M.G.L. ch. 149, sec. 27

Failure of the employer to pay "prevailing wage rates," which are the minimum wage rates listed above, on public works projects is a violation of M.G.L. ch. 149, sec. 27B. Employees not receiving such rates should report the violation to the Office of Fair Labor and Business Practices, 100 Cambridge Street, Boston, MA 02108; Tel: 617-727-3465.

Issue Date: 8/1/2008

Rate Sheet: NEWTON

Job ID: 122486

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DEVAL L. PATRICK
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THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT
DIVISION OF OCCUPATIONAL SAFETY

Prevailing Wage Rates

As determined by the Commissioner under the provisions of the
Massachusetts General Laws, Chapter 149, Sections 26 to 27H



GEORGE NOEL
Director
LAURA M. MARLIN
Commissioner

Awarding Authority: CITY OF NEWTON

Contract Number: 0919

City/Town: NEWTON

Description Of Work: MEML SPAULDING SCHOOL TANK/VAULT REPLACEMENT WORK

Job Location: VARIOUS

Classification	Effective Dates and Total Rates					
HVAC (TESTING AND BALANCING - AIR)	8/1/2008	\$60.330	2/1/2009	\$61.450	8/1/2009	\$62.700
HVAC (TESTING AND BALANCING - WATER)	3/1/2008	\$62.980	9/1/2008	\$64.480	3/1/2009	\$65.730
	3/1/2010	\$68.480				
HVAC MECHANIC	3/1/2008	\$62.980	9/1/2008	\$64.480	3/1/2009	\$65.730
	3/1/2010	\$68.480				
HYDRAULIC DRILLS	6/1/2008	\$44.850	12/1/2008	\$45.850	6/1/2009	\$46.850
	6/1/2010	\$48.850	12/1/2010	\$50.100	6/1/2011	\$51.100
INSULATOR (PIPES & TANKS)	9/1/2007	\$54.660	9/1/2008	\$56.860	9/1/2009	\$59.260
IRONWORKER/WELDER	3/16/2008	\$55.610	9/16/2008	\$56.910	3/16/2009	\$58.260
	3/16/2010	\$61.010				
JACKHAMMER & PAVING BREAKER OPERATOR	6/1/2008	\$44.350	12/1/2008	\$45.350	6/1/2009	\$46.350
	6/1/2010	\$48.350	12/1/2010	\$49.600	6/1/2011	\$50.600
LABORER	6/1/2008	\$44.100	12/1/2008	\$45.100	6/1/2009	\$46.100
	6/1/2010	\$48.100	12/1/2010	\$49.350	6/1/2011	\$50.350
LABORER: CARPENTER TENDER	6/1/2008	\$44.100	12/1/2008	\$45.100	6/1/2009	\$46.100
	6/1/2010	\$48.100	12/1/2010	\$49.350	6/1/2011	\$50.350
LABORER: CEMENT FINISHER TENDER	6/1/2008	\$44.100	12/1/2008	\$45.100	6/1/2009	\$46.100
	6/1/2010	\$48.100	12/1/2010	\$49.350	6/1/2011	\$50.350
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER	5/31/2008	\$43.350				
LABORER: MASON TENDER	6/1/2008	\$44.350	12/1/2008	\$45.350	6/1/2009	\$46.350
	6/1/2010	\$48.350	12/1/2010	\$49.600	6/1/2011	\$50.600
LABORER: MULTI-TRADE TENDER	6/1/2008	\$44.100	12/1/2008	\$45.100	6/1/2009	\$46.100
	6/1/2010	\$48.100	12/1/2010	\$49.350	6/1/2011	\$50.350
LABORER: TREE REMOVER	6/1/2008	\$44.100	12/1/2008	\$45.100	6/1/2009	\$46.100
	6/1/2010	\$48.100	12/1/2010	\$49.350	6/1/2011	\$50.350
LASER BEAM OPERATOR	6/1/2008	\$44.350	12/1/2008	\$45.350	6/1/2009	\$46.350
	6/1/2010	\$48.350	12/1/2010	\$49.600	6/1/2011	\$50.600
MARBLE & TILE FINISHERS	8/1/2008	\$54.250	2/1/2009	\$54.800	8/1/2009	\$56.240
	8/1/2010	\$58.470	2/1/2011	\$59.270	8/1/2011	\$60.950
MARBLE MASONS, TILELAYERS & TERRAZZO MECH	8/1/2008	\$64.670	2/1/2009	\$65.360	8/1/2009	\$67.160
	8/1/2010	\$69.950	2/1/2011	\$70.940	8/1/2011	\$73.040
MECH. SWEEPER OPERATOR (NON-CONSTRUCTION)	7/1/2008	\$27.300	7/1/2009	\$28.300	7/1/2010	\$29.000
MECH. SWEEPER OPERATOR (ON CONST. SITES)	6/1/2008	\$55.110	12/1/2008	\$56.070	6/1/2009	\$57.180
	6/1/2010	\$59.520	12/1/2010	\$60.770		
MECHANICS MAINTENANCE	6/1/2008	\$55.110	12/1/2008	\$56.070	6/1/2009	\$57.180
	6/1/2010	\$59.520	12/1/2010	\$60.770		
MILLWRIGHT (Zone 1)	3/1/2008	\$52.050	9/1/2008	\$53.200	3/1/2009	\$54.400
MORTAR MIXER	6/1/2008	\$44.350	12/1/2008	\$45.350	6/1/2009	\$46.350
	6/1/2010	\$48.350	12/1/2010	\$49.600	6/1/2011	\$50.600

This wage schedule must be posted at the work site in accordance with M.G.L. ch. 149, sec. 27

Failure of the employer to pay "prevailing wage rates," which are the minimum wage rates listed above, on public works projects is a violation of M.G.L. ch. 149, sec. 27B. Employees not receiving such rates should report the violation to the Office of Fair Labor and Business Practices, 100 Cambridge Street, Boston, MA 02108; Tel: 617-727-3465.

Issue Date: 8/1/2008

Rate Sheet: NEWTON

Job ID: 122486

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DEVAL L. PATRICK
Governor
TIMOTHY F. MURRAY
Lt. Governor

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT
DIVISION OF OCCUPATIONAL SAFETY

Prevailing Wage Rates

As determined by the Commissioner under the provisions of the
Massachusetts General Laws, Chapter 149, Sections 26 to 27H



GEORGE NOEL
Director
LAURA M. MARLIN
Commissioner

Awarding Authority: CITY OF NEWTON

Contract Number: 0919

City/Town: NEWTON

Description Of Work: MEML SPAULDING SCHOOL TANK/V AULT REPLACEMENT WORK

Job Location: VARIOUS

Classification	Effective Dates and Total Rates					
OILER (OTHER THAN TRUCKS, CRANES, GRADALLS)	6/1/2008	\$39.960	12/1/2008	\$40.530	6/1/2009	\$41.180
	6/1/2010	\$42.570	12/1/2010	\$43.310	12/1/2009	\$41.840
OILER (TRUCKS, CRANES, GRADALLS)	6/1/2008	\$42.700	12/1/2008	\$43.350	6/1/2009	\$44.080
	6/1/2010	\$45.640	12/1/2010	\$46.470	12/1/2009	\$44.810
OTHER POWER DRIVEN EQUIPMENT - CLASS II	6/1/2008	\$55.110	12/1/2008	\$56.070	6/1/2009	\$57.180
	6/1/2010	\$59.520	12/1/2010	\$60.770	12/1/2009	\$58.280
PAINTER (BRIDGES/TANKS)	7/1/2008	\$60.060	1/1/2009	\$61.210	7/1/2009	\$62.360
PAINTER (SPRAY OR SANDELAST, NEW) *	7/1/2008	\$50.960	1/1/2009	\$52.110	7/1/2009	\$53.260
PAINTER (SPRAY OR SANDELAST, REPAINT)	7/1/2008	\$49.020	1/1/2009	\$50.170	7/1/2009	\$51.320
PAINTER (TRAFFIC MARKINGS)	6/1/2008	\$44.100	12/1/2008	\$45.100	6/1/2009	\$46.100
	6/1/2010	\$48.100	12/1/2010	\$49.350	12/1/2011	\$51.600
PAINTER / TAPER (BRUSH, NEW) *	7/1/2008	\$49.560	1/1/2009	\$50.710	7/1/2009	\$51.860
PAINTER / TAPER (BRUSH, REPAINT)	7/1/2008	\$47.620	1/1/2009	\$48.770	7/1/2009	\$49.920
PANEL & PICKUP TRUCKS DRIVER	6/1/2008	\$41.140	12/1/2008	\$42.090	1/1/2010	\$51.070
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK)	8/1/2008	\$58.090	8/1/2009	\$60.240	8/1/2010	\$62.590
PILE DRIVER	8/1/2008	\$58.090	8/1/2009	\$60.240	8/1/2010	\$62.590
PIPEFITTER & STEAMFITTER	3/1/2008	\$62.980	9/1/2008	\$64.480	3/1/2009	\$65.730
	3/1/2010	\$68.480	9/1/2009	\$67.230	9/1/2009	\$67.230
PIPELAYER	6/1/2008	\$44.350	12/1/2008	\$45.350	6/1/2009	\$46.350
	6/1/2010	\$48.350	12/1/2010	\$49.600	12/1/2009	\$47.350
PLUMBERS & GASFITTERS	3/1/2008	\$62.500	9/1/2008	\$64.000	6/1/2011	\$51.850
	3/1/2010	\$68.000	3/1/2009	\$65.250	12/1/2011	\$52.600
PNEUMATIC CONTROLS (TEMP)	3/1/2008	\$62.980	9/1/2008	\$64.480	3/1/2009	\$65.730
	3/1/2010	\$68.480	9/1/2009	\$67.230	9/1/2009	\$67.230
PNEUMATIC DRILL/TOOL OPERATOR	6/1/2008	\$44.350	12/1/2008	\$45.350	6/1/2009	\$46.350
	6/1/2010	\$48.350	12/1/2010	\$49.600	12/1/2009	\$47.350
POWDERMEN & BLASTER	6/1/2008	\$45.100	12/1/2008	\$46.100	6/1/2011	\$51.850
	6/1/2010	\$49.100	12/1/2010	\$50.350	12/1/2011	\$52.600
POWER SHOVEL/DERRICK/TRENCHING MACHINE	6/1/2008	\$55.410	12/1/2008	\$56.390	6/1/2009	\$57.500
	6/1/2010	\$59.870	12/1/2010	\$61.120	12/1/2009	\$58.620
PUMP OPERATOR (CONCRETE)	6/1/2008	\$55.410	12/1/2008	\$56.390	6/1/2009	\$57.500
	6/1/2010	\$59.870	12/1/2010	\$61.120	12/1/2009	\$58.620
PUMP OPERATOR (DEWATERING, OTHER)	6/1/2008	\$45.620	12/1/2008	\$46.340	6/1/2009	\$47.160
	6/1/2010	\$48.900	12/1/2010	\$49.830	12/1/2009	\$47.980
READY-MIX CONCRETE DRIVER	5/1/2008	\$39.140	5/1/2009	\$40.520	5/1/2010	\$41.080
RECLAIMERS	6/1/2008	\$55.110	12/1/2008	\$56.070	5/1/2011	\$41.690
	6/1/2010	\$59.520	12/1/2010	\$60.770	6/1/2009	\$57.180
RESIDENTIAL WOOD FRAME CARPENTER ***	3/1/2008	\$34.170	12/1/2009	\$57.180	12/1/2009	\$58.280

This wage schedule must be posted at the work site in accordance with M.G.L. ch. 149, sec. 27

Failure of the employer to pay "prevailing wage rates," which are the minimum wage rates listed above, on public works projects is a violation of M.G.L. ch. 149, sec. 27B. Employees not receiving such rates should report the violation to the Office of Fair Labor and Business Practices, 100 Cambridge Street, Boston, MA 02108; Tel: 617-727-3465.

Issue Date: 8/1/2008

Rate Sheet: NEWTON

Job ID: 122486

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DEVAL L. PATRICK
Governor
TIMOTHY F. MURRAY
Lt. Governor

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT
DIVISION OF OCCUPATIONAL SAFETY

Prevailing Wage Rates

As determined by the Commissioner under the provisions of the
Massachusetts General Laws, Chapter 149, Sections 26 to 27H



GEORGE NOEL
Director
LAURA M. MARLIN
Commissioner

Awarding Authority: CITY OF NEWTON

Contract Number: 0919

City/Town: NEWTON

Description Of Work: MEML SPAULDING SCHOOL TANK/VAULT REPLACEMENT WORK

Job Location: VARIOUS

Classification	Effective Dates and Total Rates					
RIDE-ON MOTORIZED BUGGY OPERATOR	6/1/2008 \$44.350	12/1/2008 \$45.350	6/1/2009 \$46.350	12/1/2009 \$47.350		
	6/1/2010 \$48.350	12/1/2010 \$49.600	6/1/2011 \$50.600	12/1/2011 \$51.850		
ROLLER/SPREADER/MULCHING MACHINE	6/1/2008 \$55.110	12/1/2008 \$56.070	6/1/2009 \$57.180	12/1/2009 \$58.280		
	6/1/2010 \$59.520	12/1/2010 \$60.770				
ROOFER (Inc. Roofer Waterproofing & Roofer Dampproofg)	8/1/2008 \$52.460	2/1/2009 \$53.860				
SHEET METAL WORKER	8/1/2008 \$60.330	2/1/2009 \$61.450	8/1/2009 \$62.700	2/1/2010 \$63.950		
SIGN ERECTOR	6/1/2008 \$35.520	6/1/2009 \$37.780				
SLATE / TILE / PRECAST CONCRETE ROOFER	8/1/2008 \$52.710	2/1/2009 \$54.110				
SPECIALIZED EARTH MOVING EQUIP < 35 TONS	6/1/2008 \$41.600	12/1/2008 \$42.550				
SPECIALIZED EARTH MOVING EQUIP > 35 TONS	6/1/2008 \$41.890	12/1/2008 \$42.840				
SPRINKLER FITTER	3/16/2008 \$64.200	9/16/2008 \$65.700	3/16/2009 \$66.950	9/16/2009 \$68.450		
	3/16/2010 \$69.700					
STEAM BOILER OPERATOR	6/1/2008 \$55.110	12/1/2008 \$56.070	6/1/2009 \$57.180	12/1/2009 \$58.280		
	6/1/2010 \$59.520	12/1/2010 \$60.770				
TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN	6/1/2008 \$55.110	12/1/2008 \$56.070	6/1/2009 \$57.180	12/1/2009 \$58.280		
	6/1/2010 \$59.520	12/1/2010 \$60.770				
TELECOMMUNICATION TECHNICIAN	3/1/2008 \$50.070	9/1/2008 \$51.000	3/1/2009 \$51.920	9/1/2009 \$52.860		
	3/1/2010 \$53.780	9/1/2010 \$54.700	3/1/2011 \$55.640			
TERRAZZO FINISHERS	8/1/2008 \$63.570	2/1/2009 \$64.260	8/1/2009 \$66.060	2/1/2010 \$66.950		
	8/1/2010 \$68.850	2/1/2011 \$69.840	8/1/2011 \$71.940	2/1/2012 \$72.930		
TEST BORING DRILLER	5/31/2008 \$44.750					
TEST BORING DRILLER HELPER	5/31/2008 \$43.470					
TEST BORING LABORER	5/31/2008 \$43.350					
TRACTORS/PORTABLE STEAM GENERATORS	6/1/2008 \$55.110	12/1/2008 \$56.070	6/1/2009 \$57.180	12/1/2009 \$58.280		
	6/1/2010 \$59.520	12/1/2010 \$60.770				
TRAILERS FOR EARTH MOVING EQUIPMENT	6/1/2008 \$42.180	12/1/2008 \$43.130				
TUNNEL WORK (COMP. AIR/HAZ. WASTE)	12/1/2007 \$57.430					
TUNNEL WORK (COMPRESSED AIR)	12/1/2007 \$55.430					
TUNNEL WORK (FREE AIR/HAZ. WASTE)	12/1/2007 \$49.500					
TUNNEL WORK (FREE AIR)	12/1/2007 \$47.500					
VAC-HAUL	6/1/2008 \$41.600	12/1/2008 \$42.550				
WAGON DRILL OPERATOR	6/1/2008 \$44.350	12/1/2008 \$45.350	6/1/2009 \$46.350	12/1/2009 \$47.350		
	6/1/2010 \$48.350	12/1/2010 \$49.600	6/1/2011 \$50.600	12/1/2011 \$51.850		
WASTE WATER PUMP OPERATOR	6/1/2008 \$55.410	12/1/2008 \$56.390	6/1/2009 \$57.500	12/1/2009 \$58.620		
	6/1/2010 \$59.870	12/1/2010 \$61.120				
WATER METER INSTALLER	3/1/2008 \$62.500	9/1/2008 \$64.000	3/1/2009 \$65.250	9/1/2009 \$66.750		
	3/1/2010 \$68.000					

This wage schedule must be posted at the work site in accordance with M.G.L. ch. 149, sec. 27

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Issue Date: 8/1/2008

Rate Sheet: NEWTON

Job ID: 122486

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DEVAL L. PATRICK
Governor
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THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT
DIVISION OF OCCUPATIONAL SAFETY

Prevailing Wage Rates

As determined by the Commissioner under the provisions of the
Massachusetts General Laws, Chapter 149, Sections 26 to 27H



GEORGE NOEL
Director
LAURA M. MARLIN
Commissioner

Awarding Authority: CITY OF NEWTON

Contract Number: 0919

City/Town: NEWTON

Description Of Work: MEML SPAULDING SCHOOL TANK/W AULT REPLACEMENT WORK

Job Location: VARIOUS

Classification

Effective Dates and Total Rates

* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used.

** The Residential Wood Frame Carpenter classification applies only to the construction of new, wood frame residences that do not exceed four stories including the basement.

This wage schedule must be posted at the work site in accordance with M.G.L. ch. 149, sec. 27

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Issue Date: 8/1/2008

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Job ID: 122486

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COMMONWEALTH OF MASSACHUSETTS

Division of Occupational Safety

Minimum wage rates for apprentices employed on public works projects are listed below as a percentage of the pre-determined hourly wage rate established by the Commissioner under the provisions of the M.G.L. c. 149, ss. 26-27D. Apprentice ratios are established by the Division of Apprentice Training pursuant to M.G.L. c. 23, ss. 11E-11L.

All apprentices must be registered with the Division of Apprentice Training in accordance with M.G.L. c. 23, ss. 11E-11L.

City/Town:	NEWTON	All steps are 6 months (1000 Hours) unless otherwise specified**									
Classification	Ratio*	1	2	3	4	5	6	7	8	9	10
ASBESTOS INSULATOR (Pipes & Tanks)	1:4	50	60	70	80						
				Steps are 1 year							
BOILERMAKER	1:5	65	65	70	75	80	85	90	95		
BRICK/PLASTER/CEMENT MASON	1:5	50	60	70	80	90					
CARPENTER	1:5	50	60	70	75	80	80	90	90		
CARPENTER (Residential Wood Frame)	1:5	60	60	65	70	75	80	85	90		
ELECTRICIAN	2:3***	30	35	40	45	50	55	65	70	75	80
				App. Start 2003+:40/40/45/45/50/55/60/65/70/75							
ELEVATOR CONSTRUCTOR	1:1	50	55	65	70	80					
				Steps 1-2 are 6 mos.; Steps 3-5 are 1 year							
FLOORCOVERER	1:1	50	55	60	65	70	75	80	85		
				Steps are 950 hrs.							
GLAZIER	1:1	50	55	60	65	70	75	80	90		
				Steps are 750 hrs.							
HOIST/PORT. ENG.	1:5	55	60	65	70	75	80	85	90		
IRONWORKER		60	70	75	80	85	90				
Structural 1:6; Ornamental 1:4											
LABORER	1:5	60	70	80	90						
MARBLE-TILE-TERRAZZO FINISHER	1:3	50	60	70	80	90					
				Steps are 800 hrs.							
MARBLE-TILE-TERRAZZO MECHANIC	1:3	50	60	70	80	90					
MILLWRIGHT	1:5	50	55	60	65	70	75	80	85		
PAINTER	1:1	50	55	60	65	70	75	80	90		
				Steps are 750 hrs.							
PILE DRIVER	1:3	60	65	70	75	80	85	90	95		

* Ratios are expressed in allowable number of apprentices to journeymen or fraction thereof.

** Multiple ratios are listed in comment field.

*** The job site ratio of 2 apprentices(App) for every 3 journeymen(JM) is allowed as follows:
1 JM: 1 App; 2-3 JM: 2 App; 4-6 JM: 4 App; 7- 9 JM: 6 App; 10- 12 JM: 8 App; 13-15 JM: 10 App; etc. Not more than 50% of the apprentices on a job site may have standing as a 1st year apprentice. All other apprentices must have 2nd, 3rd, 4th, or 5th year standing.

**** The job site ratio of 2 apprentices(App) for every 3 journeymen(JM) is allowed as follows:
1-2 JM: 1 App; 3-4 JM: 2 App; 5 JM: 3 App; 6-7 JM: 4 App; 8 JM: 5 App; etc

Issue Date: 8/1/2008

Rate Sheet: NEWTON

Job ID: 122486

COMMONWEALTH OF MASSACHUSETTS

Division of Occupational Safety

Minimum wage rates for apprentices employed on public works projects are listed below as a percentage of the pre-determined hourly wage rate established by the Commissioner under the provisions of the M.G.L. c. 149, ss. 26-27D. Apprentice ratios are established by the Division of Apprentice Training pursuant to M.G.L. c. 23, ss. 11E-11L.

All apprentices must be registered with the Division of Apprentice Training in accordance with M.G.L. c. 23, ss. 11E-11L.

City/Town:	NEWTON			All steps are 6 months (1000 Hours) unless otherwise specified**							
PIPEFITTER	**	40	45	60	70	80					
** 1:3; 3:15; 1:10 thereafter		Steps are 1 year									
PLUMBER	**	35	40	55	65	75					
** 1:2; 2:6; 3:10; 4:14; 5:19		Steps are 1 year; Step 4 w/ license-70; Step 5 w/ license-80									
REFRIGERATION / AC MECHANIC	**	40	45	60	70	80					
** 1:1;1:2;2:4;3:6;4:8;5:10;6:12;7:14;8:17;9:20;10:23(Steps are 1 year									
ROOFER	**	50	60	65	75	85					
** 1:5; 2:6 -10 thereafter 1:10 (or portion thereof)		Step 1 is 2000 hrs.; Steps 2-5 are 1000 hrs.									
ROOFER (REROOFING)	**	50	60	65	75	85					
** 1:4; Thereafter 1:1		Step 1 is 2000 hrs.; Steps 2-5 are 1000 hrs.									
SHEET METAL WORKER	1:4	40	45	50	60	65	75	85			
		Steps 1-3 are 1 year; Steps 4-7 are 6 mos.									
SIGN ERECTOR	1:1	50	55	60	65	70	75	80	85	90	
		Steps are 4 mos.									
SPRINKLER FITTER	1:1	40	45	50	55	60	65	70	75	80	85
TELECOMMUNICATION TECHNICIAN	1:1	40	45	50	55	60	65	75	80		

* Ratios are expressed in allowable number of apprentices to journeymen or fraction thereof.

** Multiple ratios are listed in comment field.

*** The job site ratio of 2 apprentices(App) for every 3 journeymen(JM) is allowed as follows:

1 JM: 1 App; 2-3 JM:2 App; 4-6 JM: 4 App; 7- 9 JM: 6 App; 10- 12 JM: 8 App; 13-15 JM: 10 App; etc. Not more than 50% of the apprentices on a job site may have standing as a 1st year apprentice. All other apprentices must have 2nd, 3rd, 4th, or 5th year standing.

**** The job site ratio of 2 apprentices(App) for every 3 journeymen(JM) is allowed as follows:

1-2 JM: 1 App; 3-4 JM: 2 App; 5 JM: 3 App; 6-7 JM: 4 App; 8 JM: 5 App; etc

Issue Date: 8/1/2008

Rate Sheet: NEWTON

Job ID: 122486

The Massachusetts Prevailing Wage Law

M.G.L. ch. 149, §§ 26 – 27

NOTICE TO AWARDING AUTHORITIES

- The enclosed wage schedule applies only to the specific project listed at the top and will remain in effect for the duration of the project.
- You should request an updated wage schedule from the Division of Occupational Safety if you have not opened bids or selected a contractor within 90 days of the date of issuance of the enclosed wage schedule.
- The wage schedule shall be incorporated in any advertisement or call for bids for the project for which it has been issued.
- Once a contractor has been selected by the awarding authority, the wage schedule shall be made a part of the contract for that project.

NOTICE TO CONTRACTORS

- The enclosed wage schedule must be posted in a conspicuous place at the work site during the life of the project.
- The wages listed on the enclosed wage schedule must be paid to employees on public works projects regardless of whether they are employed by the prime contractor, a filed sub-bidder, or any sub-contractor.
- The enclosed wage schedule applies to all phases of the project including the final clean-up. Contractors whose only role is to perform final clean-up must pay their employees according to this wage schedule.
- All apprentices must be registered with the Massachusetts Division of Apprentice Training in order to be paid at the reduced apprentice rates. If a worker is not registered with the Division of Apprentice Training, they must be paid the “total rate” listed on the wage schedule regardless of experience or skill level. For further information, please call (617) 727-3486 or write to the Division of Apprentice Training, 399 Washington Street, 4th Floor, Boston, MA 02108

WEEKLY PAYROLL RECORDS REPORT & STATEMENT OF COMPLIANCE

In accordance with Massachusetts General Law c149, §27B, a true and accurate record must be kept of all persons employed on the public works project for which the enclosed rates have been provided. A Payroll Form has been printed on the reverse of this page and includes all the information required to be kept by law. Every contractor or subcontractor is required to keep these records and preserve them for a period of three years from the date of completion of the contract.

In addition, every contractor and subcontractor is required to submit a copy of there weekly payroll records to the awarding authority. This is required to be done on a weekly basis. Once collected, the awarding authority is also required to preserve those records for three years.

In addition, each such contractor, subcontractor or public body shall furnish to the Department of Labor & Workforce Development/Division of Occupational Safety within fifteen days after completion of its portion of the work a statement, executed by the contractor, subcontractor or public body who supervises the payment of wages, in the following form:

STATEMENT OF COMPLIANCE

_____, 200_____

I, _____,

(Name of signatory party) (Title)

do hereby state:

That I pay or supervise the payment of the persons employed by

_____ on the _____

(Contractor, subcontractor or public body) (Building or project)

and that all mechanics and apprentices, teamsters, chauffeurs and laborers employed on said project have been paid in accordance with wages determined under the provisions of sections twenty-six and twenty-seven of chapter one hundred and forty nine of the General Laws.

Signature _____

Title _____

DIVISION OF OCCUPATIONAL SAFETY, 399 WASHINGTON STREET, 5TH FL., BOSTON, MA. 02108

Print Name & Title:

NOTE: Every contractor and subcontractor is required to submit a copy of their weekly payroll records to the awarding authority.

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SECTION 01310

PROJECT MANAGEMENT AND COORDINATION

PART I - GENERAL

1.00 GENERAL PROJECT COORDINATION

- A. Coordination: The Contractor is fully responsible for coordinating the Work of this Contract including scheduling, submittals, Work and other activities included in various Sections to assure efficient and orderly sequence of installation of interdependent construction elements. The Contractor is responsible for coordinating actual installed location and interface of work, and to make provisions to accommodate items scheduled for later installation.
- B. Where installation of one component depends on installation of other components before or after its own installation, schedule activities in the sequence required to obtain efficient installation with the least amount of alterations, or cuffing and patching, to completed Work.
 - 1. The Contractor shall be responsible to uncover work completed, to install ill-timed work, at no additional cost to the Owner.
- C. Where space is limited, coordinate installation of different components to assure maximum accessibility for maintenance, service and repair.
- D. Coordinate space requirements and installation of mechanical and electrical work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with line of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- E. Verify that utility requirement characteristics of operating equipment are compatible with building utilities. Coordinate work of various Sections having interdependent responsibilities for installing, connecting to, and placing in service such equipment.
- F. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- G. Coordinate completion and clean up of Work of separate Sections in preparation for Substantial Completion and Owner's occupancy.
- H. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

1.01 UTILITIES, MECHANICAL AND ELECTRICAL COORDINATION

- A. Coordinate the Work of all Divisions.
- B. Give all advance notice to public utility companies as required by law, and provide proper disposition, subject to Engineer's approval of all existing pipe lines, conduits, sewers, drains, poles, wiring, and other utilities that in any way interfere with the Work, whether or not they are specifically shown on the Drawings.
- C. Notify Owner and appropriate authorities when coming across an unknown utility line(s), and await decision as to how to dispose of same.

- D. When an existing utility line must be cut and plugged or capped, moved, or relocated, or has become damaged, notify the Owner and Utility company involved, and assure the protection, support, or moving of utilities to adjust them to the new work.
- E. The Contractor shall be responsible for all damage caused to existing, active utilities located within the limits of this Contract, whether or not such utilities are shown on the Drawings, including resultant damages or injuries to persons or properties.
- F. Provide openings in the work for penetration of mechanical and electrical work.

1.02 COORDINATION OF CUTTING AND PATCHING

- A. Cutting and patching coordination: The Contractor is responsible for coordination of all cutting and patching necessary for the completion of this Contract and for the quality and appearance of all patch Work in exposed-to-view finished materials.
- B. Specialized cutting and patching: To achieve optimum results in cutting and patching of particular materials, surfaces and products, patching work shall be performed by those installers or fabricators specialized under the Sections:

1.03 COORDINATION DOCUMENTS

- A. General: Prepare coordination drawings for areas where close coordination is required for installation of products and materials fabricated off-site by separate entities, and where limited space necessitates maximum utilization of space for efficient installation of different components.
 - 1. Coordination Drawings include, but are not necessarily limited to:
 - a. Adjacent Structures.
 - b. Concrete Pad layout.
 - c. Hatchway layout.
 - d. Test Wells.
 - e. Fill Boxes.
 - f. All piping and valves.
 - g. Valve Boxes.
- B. Timing: Prior to fabricating materials or beginning work, supervise and direct the creation of one complete set of coordination drawings showing complete coordination and integration of work, including, but not limited to, structural, architectural, mechanical, and other disciplines.
- C. Intent: Coordination drawings are for the Contractor's use during construction and are not to be construed as replacing shop drawings or record drawings. Engineer's review of submitted coordination drawings shall not relieve the Contractor from his overall responsibility for the coordination of the Work of the Contract.
- D. Base sheets: Contractor shall prepare and provide one accurately scaled set of coordination drawing "base sheets" on reproducible transparencies showing all work. Base sheets shall be at appropriate scale.
 - 1. Size and Placement of pad.
 - 2. Indicate horizontal and vertical dimensions to avoid interference with structural building, lines, and other services.
 - 3. Indicate elevations relative to finish floor for bottom of ductwork and piping and conduit (6 inches and greater in diameter).
 - 4. Indicate the main paths for the installation, or removal of, debris and equipment from the worksite.

- E. Review and modify and approve coordination drawings in cooperation with individual installers and subcontractors to assure conflicts are resolved before work in field is begun and to ensure location of work exposed to view is as indicated or as approved by Engineer.
 - 1. The Contractor shall stamp, sign and submit coordination drawing originals to Engineer for review.
 - 2. Do not commence work in areas described in the coordination drawings until receipt of Engineers comments.

1.04 PROJECT ADMINISTRATION

- A. Prepare memoranda for distribution to each party involved outlining required coordination procedures. Include required notices, reports, and attendance at meetings.
- B. Prepare similar memoranda for the Owner and separate Contractors where coordination of their Work is required.
- C. Conduct conferences among subcontractors and others concerned with the Work, to establish and maintain coordination and schedules, and to resolve coordination matters in dispute.
- D. Administrative Procedures: Coordinate scheduling and timing of administrative procedures with other activities to avoid conflicts and ensure orderly progress. Such activities include:
 - 1. Preparation of schedules.
 - 2. Installation and removal of temporary facilities.
 - 3. Delivery and processing of submittals.
 - 4. Progress meetings.
 - 5. Project Closeout activities.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01410

REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.00 DEFINITIONS

A. Regulations include laws, ordinances, statutes and lawful orders issued by authorities having jurisdiction, and rules, conventions and agreements within the construction industry that control performance of the Work, whether lawfully imposed by authorities having jurisdiction or not.

1.01 APPLICABLE CODES AND REGULATIONS

A. All work shall be performed in accordance with the latest version, by DATE OF ISSUE for Contract Documents, current on date of Owner-Contractor Agreement, except as indicated otherwise, of all applicable codes including the following:

B. All work shall be performed in accordance with the latest version, except as indicated otherwise, of all applicable codes including the following:

1. Commonwealth of Massachusetts State Building Code, Sixth edition.
2. National Fire Protection Association: NFPA 101 - LIFE SAFETY CODE, 1988 Edition.

C. Publication Dates: Where the date of issue of a code or regulation is not specified, comply with the standard in effect as of date of Contract Documents, or as otherwise required by authorities having jurisdiction.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01450

QUALITY CONTROL

PART 1 - GENERAL

1.00 QUALITY ASSURANCE AND CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply fully with manufacturers' instructions, including performance of each step in sequence. Notify Engineer when manufacturers' instructions conflict with the provisions and requirements of the Contract Documents; obtain clarification before proceeding with the work affected by the conflict.
- C. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate high standards or more precise workmanship.
- D. Perform work by persons qualified to produce workmanship of specified quality.
- E. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

1.01 FIELD SAMPLES

- A. Install field samples demonstrating quality level for the Work, at the site as required individual specifications Sections for review and acceptance by Engineer. Remove samples prior to date of Final Inspection, or as directed.

1.02 MOCK-UPS

- A. Where requested by Engineer, or as specified in individual specification sections, assemble and erect specified items, with specified attachment and anchorage devices, flashings, seals, and finishes. Remove mock-up assemblies prior to date of Final Inspection, or as directed.
- B. Mock-ups, when approved by the Engineer, will be used as datum for comparison with the remainder of the Work for the purposes of acceptance or rejection.
- C. Demolish and remove from site prior to requesting inspection for certification of Substantial Completion, all Mock-ups which are not permitted to remain as part of the finished work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01500

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.00 GENERAL REQUIREMENTS

- A. The Contractor shall provide and maintain all temporary facilities, controls, and construction aids as specified here-in, until they are replaced by permanent work, or until Project Substantial Completion, as appropriate.
 - 1. Temporary facilities shall be removed from the Project and shall remain the property of the Contractor.
- B. Cost or use charges for temporary facilities, utility services, controls, and construction aids and similar items specified in this Section or as required to perform the Work, are not chargeable to the Owner or Engineer, and will not be accepted as a basis of claims for a Change Order.
- C. Submit the following:
 - 1. Reports of tests, inspections, meter readings and similar procedures performed on temporary utilities.
 - 2. Schedule showing implementation and termination of each temporary utility within 15 days of commencement of the Work.
 - 3. Shop drawings for all temporary signage.
- D. Establish and initiate use of each temporary facility at time first reasonably required for proper performance of the Work. Terminate use and remove facilities at earliest reasonable time when they are no longer needed, or when permanent facilities have, with authorized use, replaced the temporary facilities.

1.01 REFERENCES

- A. Comply with applicable requirements of the following standards and those others referenced in this Section.
 - 1. ANSI A 10 - Safety Requirements for Construction and Demolition.
 - 2. NFPA 70 - National Electrical Code.
 - 3. NFPA 241 - Building Construction and Demolition Operations.

1.02 TEMPORARY UTILITIES, GENERAL

- A. Temporary utility installation, in general:
 - 1. Engage the local utility companies to install temporary service or connect to existing service. All costs of connecting to public utility lines, and furnishing of utilities during construction shall be without additional cost to the Owner.
 - 2. Provide adequate capacity at each stage of construction.
 - 3. Obtain and pay for required permits and licenses required from authorities prior to commencing installation of temporary services. Arrange for authorities having jurisdiction to inspect and test each temporary utility before use.

1.03 TEMPORARY UTILITIES, ELECTRICITY

- A. Temporary electricity: The Contractor will pay for all electrical energy required for temporary light and power. The contractor is required to provide temporary feeders, transformers, etc. of sufficient capacity from the utilities power, at the point coordinated with the local utility, to provide for the electric light and power requirements for the Project while under construction.
- B. Temporary Electricity: The contractor shall be responsible for installation and maintenance of all temporary power as defined above and further specified as follows.
1. The Contractor will pay for all electrical energy used on the Project from the beginning of construction operations to the Date of Completion of the Work. The Owner will pay for all electrical energy drawn from normal metered building supply used on the Project after the Date of Completion of the Work. The Contractor shall install a separate meter for recording the Construction Electricity.
 2. No additional charge shall be made by the contractor for switching the system on and off to meet this time requirement.
 3. Protective night lighting is required at all times (24 hours a day, seven days a week). Contractor is required to arrange for adequate outdoor lighting to illuminate staging, stockpiles, trenches, dangerous projections, excavations and similar conditions and as additionally required to protect the safety of workmen, other personnel, and the public and as an aid in the protection against theft and vandalism.
 - a. Shield lighting to protect overflow beyond Contract limits, protect eighbors from night light overflow.
 4. Responsibility of compliance with local, state and national codes for installation of the Construction Electric service shall be borne by the contractor.
 5. Replacement lamps shall be provided by the contractor during the Construction Electric period. All lamps in permanent fixtures which have been used during the Interim Electric period shall be replaced with new lamps by the contractor at his expense just prior to the Date of Completion.
 6. The following Construction Electricity shall be included by the contractor in his contract price. This schedule will not necessarily provide for all requirements of the Contractors. The Contractor or any Subcontractor having requirements for power, lighting, or service other than those provided herein, shall make the necessary arrangements to obtain such power, lighting, or service at his own expense.
 - a. The contractor shall obtain all necessary permits and shall connect to public utility line as a source for temporary electrical power, shall furnish and install the temporary electrical power and lighting systems, and shall pay for all labor, materials, and equipment required -therefor. All such temporary electrical work shall meet the requirements of the Massachusetts Electrical Code and OSHA.
 - b. The contractor shall furnish and install a feeder, or feeders, of sufficient capacity for the requirements of the project. Temporary lighting shall be based on the following requirements:
 - 1) Sufficient additional wiring outlets and lamps shall be installed to insure proper lighting.
 - 2) Temporary power, in addition to the lighting requirements, shall be provided for electrically operated tools.
 - 3) Outlets shall be located at convenient points so that extension cords of not over 50 feet in length will reach all work requiring light or power.
 - c. All necessary cables, load centers, switches and accessories required for the temporary light and power installation shall be provided and installed by the contractor.
 - d. The contractor shall furnish and install all lamps, both initial and replacement until the date of Completion.

- e. Temporary light and power requirements herein required is for the use of all trades working at the site.
 - f. All Contractors shall, individually, furnish at extension cords and lamps therefore, sockets, motors and accessories required for their work.
7. All temporary wiring, service equipment, and accessories thereto shall be removed by the contractor.
 8. The provisions of the Massachusetts Electric Code shall be strictly complied with respect to Article 305 of said code, and the following precautions shall be taken:
 - 1) Open conductors shall be fastened at ceiling height at minimum of 10 R. intervals. Conductors may not be laid on the floor, and receptacles or fixed equipment circuits shall contain a separate equipment grounding conductor H run as open wiring. Receptacles shall be of the grounding type. Branch circuits, unless installed in a complete metallic conductor and receptacles electrically connected to the grounding conductor. No bare conductors nor earth returns shall be used for wiring of any temporary circuits. Grounding circuits shall never be interrupted.
 - 2) All 15 ampere and 20 ampere receptacle outlets on single phase circuits which are used for construction purposes shall have approved groundfault circuit protection for personnel, as required by Article 210 of the Massachusetts Electrical Code.
- C. Interim Electricity: The contractor shall be responsible for Interim Electricity as defined above and further specified as follows.
1. The permanent electric power and lighting system in a given area shall be completely installed as designed before the system may be used in such area.
 2. At the termination of the use of the permanent electrical light and power system for interim electric, all panelboards shall be inspected and cleaned, and all permanent lighting fixtures which have been used shall be thoroughly cleaned and provided with new lamps, bulbs, fluorescent tubes, etc., to provide like new performance.

1.04 TEMPORARY UTILITIES, LIGHTING

- A. Temporary lighting: The contractor shall provide lighting with local switching to fulfill security requirements and provide illumination for construction operations and traffic conditions. Maintain lighting and provide routine repairs. Permanent building lighting may be utilized during construction.
1. Temporary lighting shall be based on the following requirements:
 - a. Sufficient additional wiring outlets and lamps shall be installed to insure proper lighting.
 - b. Temporary power, in addition to the lighting requirements, shall be provided throughout the building for electrically operated tools.
 - c. Outlets shall be located at convenient points so that extension cords of not over 50 feet in length will reach all work requiring light or power.

1.05 TEMPORARY UTILITIES, WATER

- A. Temporary water: Install and maintain water service and distribution piping of sizes and pressures adequate for construction. Exercise measures to conserve water, Contractor will pay for water necessary for the Work.

1.06 FIELD OFFICES AND SHEDS

A. General:

1. Availability: Provide offices ready for occupancy within 15 days after date fixed in Notice to Proceed.
2. Field offices: Provide furnished, insulated, heated and air conditioned, weathertight, office(s) which shall be portable or mobile building(s), or buildings constructed with floors raised above ground, securely fixed to foundations, with steps and landings at entrance doors.
3. Location: The location of the field office(s) and storage areas for equipment and materials shall be upon cleared portions of the job site or areas to be cleared, and shall require review and written acceptance of the Engineer. Submit plans showing field office and storage facilities for equipment and materials for acceptance by the Engineer.
 - a. Offices and sheds located within the construction area, or within 30 feet of building lines shall be of noncombustible construction. Comply with requirements of NFPA 241.

B. Contractor's field office(s): Provide habitable office(s) or space, of size to accommodate personnel, include as a minimum the following:

1. Size: For Contractor's needs and to provide space for project meetings.
2. Furnishings: Conference table and chairs to seat at least 8 persons; racks and files for Contract Documents, submittals and Project Record Documents.
 - a. Provide an outdoor weather thermometer.
 - b. Provide hard-hats for site visitors.
3. Provide duplex convenience outlets, at least one per wall.
4. Provide periodic cleaning and maintenance of office and storage areas.
5. Telephone service as specified herein above.
6. Conference table of sufficient size with seating to accommodate personnel and anticipated visitors for specified conferences and weekly progress meetings.
7. Other equipment and furniture as the Contractor deems necessary.

1.07 SANITARY FACILITIES

- A. Sanitary facilities: Provide self-contained single-occupant chemical toilet units, facilities and drinking water fixtures. Provide toilet tissue, paper towels, paper cleaning compounds and similar materials. Maintain facilities and keep clean, covered waste containers for used material.

1.08 FIRST AID AND FIRE EXTINGUISHERS

- A. First aid supplies: Comply with governing regulations.
- B. Fire extinguishers: Provide and maintain on site, adequate fire extinguishers UL rated for B-C type fires. Provide red-painted plywood standards for each extinguisher. Additionally provide a dry chemical fire extinguisher at each location where welding, torch cuffing and other similar hazardous work is in progress.

1.09 CONSTRUCTION AIDS -TEMPORARY HOISTS AND CRANES

- A. Hoisting equipment and machinery: Furnish all hoisting equipment, crane services and lift machinery required to perform the Work of this Contract. Install, operate and maintain in safe condition.

1.10 CONSTRUCTION AIDS -SCAFFOLDING, PLATFORMS, STAGING, CHUTES

- A. Provide ladders, ramps, runways, platforms, railings, chutes, and other mounted or installed construction aids as specified herein and as required to facilitate the Work. Furnish and erect construction aids and maintain in safe condition for the use of all subcontractors, installers and applicators.
- B. Furnish and erect scaffolds, staging, and maintain in safe condition, dismantle when no longer required. The Contractor shall provide scaffolds, staging, and other similar raised platforms, required to access the Work.
- C. Ladders, temporary stairs, platforms and railings, shall comply with OSHA guidelines.
 - 1. Provide and maintain temporary stairs until permanent stairs are in place and functional. When permanent stairs are erected, provide temporary railings and guards. Protect permanent stairs with temporary covers and protective treads.
 - 2. Portable ladders and mobile platforms of all required heights, shall be provided by individual users.
- D. Temporary chutes: Provide, erect, and maintain properly supported and covered chutes from openings in exterior walls of each building level in convenient and accessible locations for use of all trades, that will permit direct disposal of rubbish and debris directly into trucks or disposal units.
 - 1. Do not drop or throw any materials, rubbish, or debris from openings in the exterior walls of the project, or from roof.

1.11 VEHICULAR TRAFFIC CONTROL

- A. The Contractor shall not close or obstruct any portion of any street public or private, without obtaining permits therefore from the proper authorities.
 - 1. Provide and pay for state police traffic details at anytime that construction takes place in a public street (right of way). The Contractor is responsible for coordinating, requesting, and paying the prevailing rate of wage for police traffic details directly with the Massachusetts State Police Department.
- B. Construction parking control: Control vehicular parking to preclude interference with public traffic or parking, access by emergency vehicles, or construction operations.
 - 1. Monitor parking of construction personnel private vehicles. Maintain free vehicular access to and through parking areas. Prohibit parking on or adjacent to access roads, or in non-designated areas.
- C. Haul routes: Consult with governing authorities and establish public thoroughfares which will be used as haul routes and site access. Confine construction traffic to designated haul routes.
 - 1. Confine construction traffic to designated haul routes.
 - 2. Provide traffic control at critical areas of haul routes to expedite traffic flow and to minimize interference with normal public traffic.
- D. Traffic signals and signs: Provide, operate and maintain temporary equipment, services, and personnel, with traffic control and protective devices, as required to direct and maintain an orderly flow of traffic in all areas under Contractors control, or affected by Contractors operations, including but not limited to haul routes, at site entrances, at on-site access roads, and parking areas during construction.
- E. Provide traffic control and directional signs as needed to direct construction and public traffic.

- F. Provide traffic signal and detour signs with breakaway post assemblies conforming to the applicable provisions of the Standard Specifications.
- G. Provide automatic traffic control signals where required by local authorities having jurisdiction.
- H. Provide traffic cones and drums as required to maintain orderly flow of traffic.
- I. Provide lights during periods of low visibility to clearly delineate traffic lanes and to guide traffic.
- J. Provide areas of illumination of critical traffic and parking areas.

1.12 TEMPORARY BARRIERS, DUST CONTROL

- A. Provide positive means to prevent air-borne dust from dispersing into atmosphere.
 - 1. During the progress of the work, maintain the areas of construction activities including sweeping and sprinkling of area as necessary. Provide and use alternate methods for more effective dust control, when deemed necessary by regulatory agencies, without additional cost to the Owner.
- B. Prevent air-borne dust which may damage in-place equipment, furniture, casework and sensitive finishes, If required to keep dust from dispersing, provide dust-tight temporary partitions as specified under the Article entitled "Interior enclosures".
 - 1. Provide air filters over openings and grilles in air-return ducts occurring within construction areas.
 - 2. Provide openings in temporary partitions where air-return grilles occur outside of work areas. In each opening, provide standard 2 inch thick, throw-away type filter having a rated efficiency of 35 percent. Review with Engineer size requirements of filtered openings, locations of openings and how many are required.
 - 3. Replace air filters as required to maintain their efficiency.

1.13 TEMPORARY BARRIERS, NOISE CONTROL

- A. Develop and maintain a noise-abatement program and enforce strict discipline over all personnel to keep noise to a minimum.
- B. Execute construction work by methods and by use of equipment which will reduce excess noise.
 - 1. Equip air compressors with silencers, and power equipment with mufflers.
 - 2. Manage vehicular traffic and scheduling to reduce noise

1.14 TEMPORARY BARRICADES

- A. Provide barriers and barricades to prevent unauthorized entry to construction areas.
 - 1. Comply with standards and code requirements for erection of barricades, where required provide lighting, including flashing lights.
- B. Provide temporary enclosures, as required, for protection of new construction from exposure to weather, other construction operations and similar activities. Where heat is needed and the building envelope is incomplete, provide enclosures where there is no other provision for containment of heat.
 - 1. Provide doors with self-closing hardware and locks.

- C. Provide temporary roofing as needed to maintain the building water

1.15 TEMPORARY FENCES

- A. Construction fence: Provide a 6 foot high commercial grade chain link fence on top of jersey barriers with fabric around construction site; equip with vehicular and pedestrian gates and locks.

1.16 1.17 POLLUTION CONTROL

- A. Provide methods, means, and facilities required to prevent contamination of soil, water, or atmosphere by, the discharge of noxious substances from construction operations. Comply with all applicable Federal, State, County, and municipal laws regarding pollution. Prevent pollution of streams, lakes, or reservoirs with fuels, oils, bitumens, calcium chloride, acids, waste products, effluents, chemicals or other harmful substances. Prevent from such substances from entering storm drains and sanitary sewers.
- B. Provide equipment and personnel, perform emergency measures required to contain any spillage and to remove contaminated soils or liquids.
 - 1. Excavate and legally dispose of any contaminated earth off-site, and replace with suitable compacted fill and topsoil.

1.17 EROSION AND SEDIMENT CONTROL

- A. Water control:
 - 1. Grade site to drain, where exterior work has disturbed existing grades, protect site from puddling or running water.
 - 2. Do not allow water to accumulate in excavations, maintain free from water until all backfilling operations have been completed.
 - a. Remove water from excavations to prevent undercutting of built structures, and soil changes detrimental to the stability of subgrades and footings.
 - b. Keep the utility system trenches free of water until pipe joint material has hardened.
 - c. Provide and maintain pumps, sumps, suction and discharge lines, and other dewatering system components necessary to convey the water away from excavations.
 - 3. Dispose of water from excavations conforming to applicable regulations, ordinances and as directed by. Dispose of water in such a manner that will not damage abutting property or structures, construction work completed or in progress. Dewatering operations shall not impede foot or vehicular traffic surfaces; nor cause endangerment to the public health.
 - a. Filter all water pumped or discharged from the trench or excavation prior to discharge into a receiving water or drainage system.
 - b. Filter water through baled hay, a vegetative filter strip or a vegetated channel to trap sediment occurring as a result of the construction operations. The vegetated channel shall be constructed such that the discharge flow rate shall not exceed a velocity of more than 1 foot per second. The sediment shall be cleared from the channel periodically.
- B. Erosion and sediment control: Provide an erosion and sediment control program for minimizing erosion and siltation during the term of construction. The following minimum erosion control principles shall apply to the land grading and construction phases:

1. Plan and execute construction by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
 - a. Stripping of vegetation, grading, or other soil disturbance shall be done in a manner which will minimize amount of bare soil exposed at one time. Whenever feasible, natural vegetation shall be retained and protected.
 - b. Erosion control devices shall be installed as early as possible in the construction sequence prior to start of clearing and grubbing operations and excavation work.
 - c. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.
2. Sediment shall be retained on-site. Temporary erosion protection shall be accomplished by covering land with erosion protection materials, as appropriate for prevailing conditions.
 - a. Remove deposited sediment periodically.
3. Drainage provisions shall accommodate increased runoff resulting from modifications of soil and surface conditions during and after development or disturbance. Such provisions shall be in addition to existing requirements.
 - a. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.
4. Cut and fill slopes and stockpiled materials shall be protected to prevent erosion. Slopes shall be protected with permanent erosion protection when erosion exposure period is expected to be greater than or equal to six months, and temporary erosion protection when erosion exposure period is expected to be less than six months.
 - a. Except where specified slope is indicated on Drawings, fill slopes shall be limited to a grade of 2:1 (horizontal:vertical) cut slopes shall be limited to a grade of 1 -1/2:1.
 - b. Construct fill and waste areas by selective placement to avoid erosive surface silt or clays.
5. Inspect and adjust erosion and sediment control devices twice each month and after each heavy rain. Remove silt if greater than 6 inches deep. Replace damaged or deteriorated items devices.
 - a. Sediment deposits shall be disposed to off-site, in a location and manner which will not cause sediment nuisance elsewhere.

1.18 FIRE PREVENTION MEASURES

- A. The Contractor shall take all necessary precautions for the prevention of fire during - construction. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways, and other access routes. Ascertain and comply with requirements of Project insurance carrier, local fire department and the state fire marshal.
- B. Maintain the area within contract limits orderly and clean.
- C. Remove combustible rubbish promptly from the site and when required, store combustible materials in containers in fire-safe locations.
- D. Maintain a fire watch when built fire protection and warning systems have been temporarily de-activated. Maintain watch during all working hours for full period of de-activation.
 1. The Contractor will assign personnel to inspect all construction areas at the end of each day's work for fire hazards prior to lock-up.

- E. Establish procedures for fire protection for welding, cutting and open torch work, and other potentially hazardous operations. Obtain permission from local authorities having jurisdiction for such work as required by law. Provide special fire extinguishers at welding and torch cutting work.
 - 1. The Contractor and its subcontractors shall strictly comply with Massport Fire Department requirements regarding the use of paid fire-watch details by qualified firefighters.
- F. Provide for outside storage of gas tanks, sufficiently clear of any structure. Promptly remove welding and capping equipment from the building when no longer required. Do not store welding or capping materials within the building when work is not being performed.
- G. Permanent fire protection system may be activated to meet these requirements. Replace fusible link heads and other expended or discharged components at time of Substantial Completion.

1.19 SECURITY MEASURES

- A. Protect Work from theft, vandalism, and unauthorized entry.
- B. The contractor may furnish watchman service at all times when the Contractor's own forces are not at the project site for the purpose of preventing illegal trespassing, unauthorized entry, theft and vandalism at times when work is not in progress. Watchman services provided by the Contractor are subject to Owner's approval. All losses and damages which occur as a result of not having a watchmen service on duty are the full responsibility of the Contractor, who shall bear all costs incurred.
- C. Maintain security program throughout construction period until Owner occupancy precludes the need for Contractor security or at other time as directed by Engineer.

1.20 PROJECT IDENTIFICATION AND TEMPORARY SIGNAGE

- A. Signs other than those specified herein are not permitted, except those required by law or expressly authorized by the Owner.
 - 1. At all times during the project, signage must clearly direct occupants and the general public in the safe use of the building. Signs must clearly indicate areas of no admittance, and further must clearly define and direct users to building entries, exits, and [school offices] and other important destinations. All such interim signage must be painted by a professional sign painter on 3/4-inch medium density overlay plywood with letters no less than 3 inches in height. Coordinate required signage with Engineer.

1.21 REMOVAL OF TEMPORARY UTILITIES, CONTROLS, AND FACILITIES

- A. Remove temporary above grade or buried utilities, equipment, facilities, materials, prior to Substantial Completion inspection.
 - 1. Do not remove erosion control devices until after all disturbed earth has been paved.
- B. Remove underground work and compacted materials to a depth of 2 feet; fill and grade site as specified.
- C. Restore permanent facilities used during construction to specified condition.
- D. Clean and repair damage caused by installation or use of temporary work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01600

PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.00 DEFINITIONS

- A. "Products" is defined as new material, machinery, components, equipment, fixtures, and systems used in the Work. Products do not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work.
- B. "Materials" are products that are shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.
- C. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections such as wiring or piping.
- D. Definitions in this article are not intended to negate the meaning of other terms used in Contract Documents, including "specialties", "systems", "structure", "finishes", accessories", furnishings, "special construction", and similar terms, which are self explanatory and have recognized meanings in the construction industry.

1.01 BASIC PRODUCT REQUIREMENTS

- A. To the fullest extent possible, provide products of the same kind, from a single source.
- B. Provide interchangeable components of the same manufacturer, for similar components.
- C. When the Contractor has the option of selecting two or more products, ensure that products selected shall be compatible with products previously installed or approved.
- D. Provide all products complete with all accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for the intended use and effect.

1.02 PRODUCT OPTIONS

- A. Product selections: Comply with the following for selection of products:
 - 1. Products specified by reference standards or by description only: Provide any acceptable product meeting those standards or description.
 - 2. Products specified by performance requirements only: Provide any acceptable product which has been tested to show compliance with specified requirements, including indicated performances.
 - 3. Products specified by naming one or more manufacturers: Provide products of manufacturers named and meeting specifications, no options or substitutions are allowed.
 - 4. Products specified by naming one or more manufacturers with a provision for substitutions: Provide products of manufacturers named, or submit a request for substitution for any manufacturer or product not named.
- B. Visual matching: Where Specifications require matching a sample, the Engineer's decision on whether a proposed product matches is final. Where no product matches and complies with other requirements, comply with provisions for "substitutions" for selection of a matching product in another category.

1.03 PRODUCT DELIVERY AND HANDLING REQUIREMENTS

- A. Transport and handle products in accordance with manufacturer's instructions and as specified in individual specification sections.
- B. Schedule deliveries to minimize long-term storage and prevent overcrowding of construction spaces. Coordinate with installation to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.
- C. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.
- D. Provide equipment and personnel to handle and store products by methods to prevent soiling, disfigurement, or damage.

1.04 PRODUCT STORAGE AND PROTECTION REQUIREMENTS

- A. Store and protect products in accordance with manufacturer's instructions and as specified in individual specification sections.
 - 1. Provide all necessary equipment and personnel to store products by methods to prevent soiling, disfigurement and damage.
- B. Store and protect products with seals and labels intact and legible. Store sensitive products in weather-tight, climate controlled enclosures.
- C. For exterior storage of fabricated products, place on sloped supports, above ground.
- D. Provide off-site storage and protection when site does not permit on-site storage or protection.
- E. Cover products subject to deterioration with impervious sheet covering., Provide ventilation to avoid condensation.
- F. Store loose granular materials on solid flat surfaces in a well-drained area; prevent mixing with foreign matter.
- G. Arrange storage of products to permit access for inspection. Periodically inspect to assure products are undamaged and are maintained under specified conditions.
- H. Store heavy materials in locations and in a manner that will not damage or disfigure new construction.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01700

EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.00 EXAMINATION OF AND ACCEPTANCE OF SITE CONDITIONS

- A. The Contractor, its subcontractors shall inform themselves of existing site conditions before submitting his bid, and shall be fully responsible for carrying out all work required to completely and properly execute the work of the Contract, regardless of the conditions encountered in the actual work. No claim for extra compensation or extension of time will be allowed on account of actual conditions inconsistent with those assumed, except those conditions described in the General Conditions.

1.01 PROJECT PREPARATION - SURVEYING

- A. Employ a Land Surveyor registered in the Commonwealth of Massachusetts and acceptable to the Engineer.
- B. Submit evidence of Surveyor's Errors and Omissions (E&O) Insurance coverage in the form of an Insurance Certificate.

1.02 PROJECT PREPARATION - FIELD ENGINEERING

- A. Submittals.
 - 1. Submit name, address, and telephone number of Land Surveyor before starting survey work.
 - 2. Submit name, address, and telephone number of at least three proposed Land Surveyors and obtain Engineer's acceptance before starting survey work.
 - 3. On request, submit documentation verifying accuracy of survey work.
 - 4. Submit a copy of registered site drawing and certificate signed by the Land Surveyor, that the elevations and locations of the Work are in conformance with the Contract Documents.
- B. Project Record Documents
 - 1. Maintain a complete and accurate log of control and survey work as it progresses.
 - 2. On completion of foundation walls and major site improvements, prepare a certified survey illustrating dimensions, locations, angles, and elevations of construction and site work.
 - 3. Final property survey (As-built Survey): Before completion, prepare a final property survey showing significant features for the Project. Include a certification, signed by the Surveyor, to the effect that metes, bounds, lines and levels of the Project are accurately positioned as shown on the survey.
 - 4. Submit Final Property Survey and log.
- C. Examination
 - 1. Verify locations of survey control points prior to starting work.
 - 2. Promptly notify Engineer of any discrepancies discovered.
- D. Survey Reference Points

1. Contractor shall locate and protect survey control and reference points.
2. Control datum for survey is that indicated on Drawings.
3. Protect survey control points prior to starting site work; preserve permanent reference points during construction.
4. Promptly report to Engineer the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.
5. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to the Engineer.

E. Survey Requirements

1. Provide field engineering services. Utilize recognized engineering survey practices.
2. Prior to construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer and water service piping.
 - a. The existence and location of underground utilities and construction indicated on Drawings as existing are not guaranteed. Before beginning sitework, verify the existence and location of underground utilities and other construction.
3. Establish a minimum of three permanent bench marks on site, referenced to established control points. Record locations, with horizontal and vertical data, on Project Record Documents.
4. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:
 - a. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
 - b. Grid or axis for structures.
 - c. Building foundation, column locations, and ground floor elevations.
5. Periodically verify layouts by same means.
6. As-built survey, progress submissions: Surveyor shall develop an as-built survey for the work-in-place. Copies of survey shall be submitted along with request for payments for foundation work, site utilities and paving work.
7. As built survey, final submission: Surveyor shall provide an as-built survey after work has been completed.
 - a. Survey shall show the following as a minimum:
 - 1) All required legal descriptions.
 - 2) Bench marks.
 - 3) Completed foundation work.
 - 4) Building extremities.
 - 5) Pad mounted equipment.
 - 6) All paving work.

- 7) Revisions to wetland areas.
- 8) Easements and modifications to easements.
- 9) Underground utilities.
- b. Submit six (6) signed, sealed and certified copies shall be provided to the Engineer's office for review prior to filing with Massport. Ensure information is complete, accurate submitted in a timely fashion.
- 8. Surveyor's log: Maintain a surveyor's log of control and other surveys, as required herein under the Article entitled "Project Record Documents". Make this log available for reference.
 - a. Record deviations from required lines and levels. Advise the Engineer when deviations that exceed indicated or recognized tolerances are detected. On record Drawings, record deviations that are accepted and not corrected.

1.03 PROTECTION OF ADJACENT ELEMENTS

- A. Protect installed Work and provide special protection where called for in individual specification Sections.
- B. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials. Coordinate with requirements under individual specification sections.
- C. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- D. Protect non-owned vehicles, stored materials, site and structures from damage.

Refer to respective Sections for other particular protection requirements.

1.04 EXECUTION REQUIREMENTS FOR INSTALLATION, APPLICATION AND ERECTION

- A. Inspection of conditions: The Installer of each component shall inspect the substrate and conditions under which Work is performed. Do not proceed until unsatisfactory conditions have been corrected.
- B. Recheck measurements and dimensions, before starting installation.
- C. Manufacturer's instructions: Comply with manufacturer's installation instructions and recommendations, to the extent that they are more stringent than requirements in Contract Documents.
- D. Inspect material immediately upon delivery and again prior to installation Reject damaged and defective items.
- E. Install each component during weather conditions and project status that will ensure the best results. Isolate each part from incompatible material as necessary to prevent deterioration.
- F. Coordinate temporary enclosures with inspections and tests, to minimize uncovering completed construction for that purpose.
- G. Limiting exposures: Supervise operations to ensure that no part of construction, completed or in progress, is subject to harmful or deleterious exposure. Such exposures include:
 - 1. Excessive static or dynamic loading.
 - 2. Excessive internal or external pressures.
 - 3. Excessive weathering.
 - 4. Excessively high or low temperatures or humidity.

5. Air contamination or pollution.
 6. Water or ice.
 7. Chemicals or solvents.
 8. Heavy traffic, soiling, staining and corrosion.
 9. Unusual wear or other misuse.
 10. Contact between incompatible materials.
 11. Theft or vandalism.
- H. Provide attachment and connection devices and methods necessary for securing each construction element. Secure each construction element true to line and level. Allow for expansion and building movement.
- I. Visual effects: Provide uniform joint widths in exposed Work. Arrange joints to obtain the best effect. Refer questionable choices to the Engineer for decision.
- J. Mounting heights: Where mounting heights are not indicated, review heights with Engineer, prior to commencement of Work.
- K. Cleaning and protection: During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- L. Clean and maintain completed construction as often as necessary through the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

1.05 PROGRESS CLEANING

- A. General: Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
1. Unless otherwise specified under the various trade Sections of the Specifications, the Contractor shall perform clean-up operations during construction as herein specified.
- B. Control accumulation of waste materials and rubbish; periodically dispose of off-site. The Contractor shall bear all costs, including fees resulting from such disposal.
- C. Clean interior areas prior to start of finish work and maintain areas free of dust and other contaminants during finishing operations.
- D. Maintain project in accordance with all local, Commonwealth of Massachusetts, and Federal Regulatory Requirements.
- E. Store volatile wastes in covered metal containers, and remove from premises daily.
- F. Prevent accumulation of wastes which create hazardous conditions.
- G. Provide adequate ventilation during use of volatile or noxious substances.
1. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
 2. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

- H. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.
 - 1. Do not burn or bury rubbish and waste materials on site.'
 - 2. Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.
 - 3. Do not dispose of wastes into streams or waterways.
- I. Use only those materials which will not create hazards to health or property and which will not damage surfaces.
- J. Use only those cleaning materials and methods recommended by manufacturer of surface material to be cleaned.
- K. Execute cleaning to ensure that the buildings, the sites, and adjacent properties are maintained free from accumulations of waste materials and rubbish and windblown debris, resulting from construction operations.
- L. Provide on-site containers for collection of waste materials, debris and rubbish.
- M. Remove waste materials, debris, and rubbish from site at least once weekly, and dispose off-site. Comply with NFPA 241 for removal of combustible waste.
- N. Handle material in a controlled manner with as few handlings as possible. Do not drop or throw materials from heights.
- O. Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not damage surrounding surfaces.

1.06 SITE MAINTENANCE AND CLEANING

- A. Maintain traffic and parking areas in a sound condition, free of excavated material, construction equipment, products, mud, snow, and ice.
 - 1. Provide means of removing mud from vehicle wheels before entering public streets and Massport parking areas and access.
- B. Maintain permanent paved areas used for construction.
 - 1. If any street or private way shall be rendered unsafe by the Contractors operations, the Contractor shall make such repairs or provide such temporary ways or guards as shall be acceptable to the governing authority.
 - 2. Promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain paving and drainage in original, or specified, condition.

1.07 FINAL CLEANING

- A. Scheduling: Perform final cleaning immediately prior to the Engineer's review of the project for issue of the Certificate of Substantial Completion.
 - 1. Re-clean all surfaces, materials and products of the Work immediately prior to Owner's occupancy of the Project.
 - a. Should the Owner occupy any portion of the Work prior to completion of the Contract, the responsibilities for interim and final cleaning shall be in accordance with the General Conditions.
- B. Qualifications: Commercial cleaning firm, with a minimum of 3 years experience specializing in the post-construction cleaning of facilities.
- C. Protection: During the operation of final cleaning, protect surrounding materials and finishes against undue damage by the exercise of reasonable care and precautions. Clean, or repair all products and surfaces which are soiled or

otherwise damaged by Work of this Section, to match original profiles and finishes. Materials and finishes which cannot be cleaned, or repaired shall be removed and replaced with new work in conformance with the Contract Documents.

D. General cleaning requirements:

1. Remove from the job site all tools, surplus materials, equipment, scrap, debris, and waste.
2. Remove all advertising matter and temporary instructional material from exposed surfaces throughout.
3. Use only methods and cleaning materials which are compatible with and as recommended by the manufacturer of the material being cleaned.
4. Finished surfaces: Remove paint smears, spots, marks, dirt, mud and dust and similar disfigurement created by the Work, from all exposed to view interior and exterior finished surfaces.
5. Polished surfaces: Apply the polish recommended by the manufacturer of the material being polished.

E. Exterior building surfaces:

1. Visually inspect exterior surfaces and remove all traces of soil, waste materials, smudges, and other foreign matter.
2. Remove all traces of splashed materials from adjacent surfaces.
3. If necessary to achieve a uniform degree of cleanliness, hose down the exterior of the structure.
4. In the event of stubborn stains not removable with water, the Engineer may require light sandblasting or other cleaning at no additional cost to the Owner.
5. Concrete: Clean exposed concrete free of all foreign matter. If, in the opinion of the Engineer, further cleaning of specific areas is required, they shall be scrubbed with water or other cleaning agents. Acid cleaners shall not be used, except as may otherwise specifically permitted in the trade sections.

F. Bright metal: Clean metal surfaces, hardware, fixtures, appliances, equipment, and similar items free of all foreign matter. As required, lightly scrub specific stains with clean water, mild soap, and soft rags, thoroughly rinsed and wiped with clean, soft white rags. Do not use abrasive cleaners.

G. Glass: Replace broken, chipped and defective glass. Remove from glass: stains, spots, marks, paint smears; dirt and foreign materials. Clean and polish both surfaces of all interior and exterior glass. Clean and polish mirrors.

H. Carpet: Vacuum clean carpet and remove all spots and stains.

I. Hardware: Clean and polish finished hardware, remove marks, stains, scratches and blemishes.

J. Tile: Clean and polish floor and wall tile, remove grout film and excess grout.

K. Woodwork: Dust and clean [Engineerural woodwork and] finish woodwork items, remove all stains, spots, and foreign matter using methods and cleaning agents which will not harm the various finishes.

L. Site: Sweep exterior paved surfaces broom clean; rake clean unpaved surfaces.

M. Equipment: Thoroughly clean all items of food service, mechanical and electrical equipment; remove excess oils and grease from exposed surfaces.

1. Clean permanent filters and replace disposable filters if ventilating units were operated during construction.
2. Clean ducts, blowers and coils, if units were operated without filters during construction.

1.08 PROTECTING INSTALLED WORK

- A. Floor and Finished Surfaces Protection: Replace protective coverings which may become wet, torn, or ineffective.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01770

CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.00 CLOSEOUT PROCEDURES - COMPLETION

- A. Prior to requesting inspection for certification of Completion, complete the following:
 - 1. Submit list of incomplete items, value of incomplete work, and reasons work is not complete.
 - 2. Evidence of compliance with requirements of governmental agencies having jurisdiction including, but not necessarily limited to:
 - a. Certificate of Final Inspections.
 - 3. Submission of product and installation warranties, workmanship bonds, maintenance agreements, installer certifications and similar documents specified in individual sections.
 - 4. Remove temporary facilities and services that are no longer required.
 - 5. Remove mock-ups, field samples and similar items.
 - 6. Complete Final Cleaning, including repair and restoration, or replacement of damaged Work.
 - 7. Remove surplus materials, rubbish and similar elements.
 - 8. Application for reduction of retainage.
 - 9. Consent of Surety.
- B. Within 1 week after receipt of the notice of Completion from the Contractor, the Engineer will inspect to determine status of completion.
 - 1. Should the Engineer determine that the Work is not complete:
 - a. The Engineer will notify the Contractor in writing, stating the reasons therefore.
 - b. The Contractor shall remedy the deficiencies and send a second written notice of Completion to the Engineer, requesting re-inspection.
- C. When the Engineer concurs that the Work is complete:
 - 1. The Engineer will issue a construction completion affidavit accompanied by the Contractor's list of items to be completed or corrected, as verified by the Engineer
 - 2. The Engineer will submit the Certificate to the Owner, and to the Contractor, for their written acceptance of the responsibilities assigned to them in the Certificate.

1.01 CLOSEOUT PROCEDURES - FINAL ACCEPTANCE

- A. Prior to requesting inspection for certification of Final Acceptance and final payment, perform the following:

1. Completion of incomplete Work. Submit a copy of the final inspection list stating that each item has been completed or otherwise resolved for acceptance.
 2. Prove that all taxes, fees and similar legal obligations have been paid.
 3. Submit final payment requests with release of all liens, and supporting documentation.
 4. Provide written assurances that all unsettled claims are in the process of and will be resolved.
 5. Submit updated final statement, including accounting for final additional changes to the Contract Sum. Show additional Contract Sum, additions and deductions, previous Change Orders, total adjusted Contract Sum, previous payments and Contract Sum due.
 6. Submit consent of surety to Final Payment.
 7. Submit evidence of continuing insurance coverage complying with insurance requirements.
 8. Remove remaining temporary facilities and services.
 9. Deliver to Owner and obtain receipts for:
 - a. Operation and Maintenance Manuals for items so listed in individual Sections of the Specifications, and for other items when so directed by the Engineer.
 - b. Project Record Documents (as-builts), including reproducible mylars and Autocad format drawings on disc.
 - c. Warranties and bonds specified in individual Sections of the Specifications.
 - d. List of subcontractors, service organizations, and principal vendors, including names, addresses, and telephone numbers where they can be reached for emergency service at all times including nights weekends, and holidays.
 12. Submit Certification stating Work has been inspected for compliance with the Contract Documents.
 13. Submit Certification stating equipment and systems have been tested in presence of Owner's representative and are fully operational.
 14. Submit Certification stating that Work is 100 percent complete and ready for final inspection.
- B. Within 2 weeks after receipt of the request for Final Acceptance from the Contractor, the Engineer will inspect to determine status of completion.
1. Should the Engineer determine that the Work is incomplete or defective:
 - a. The Engineer will notify the Contractor in writing, stating the reasons listing the incomplete or defective work.
 - b. The Contractor shall take immediate steps to remedy the deficiencies and send a second written notice of request for Final Acceptance to the Engineer.
 - c. Costs relative to the Engineers re-inspection due to failure of Work to comply with claims made by the Contractor, will be compensated by the Owner, who will deduct the amount of such compensation from the Final Payment due to the Contractor.
- C. After the Engineer finds the Work acceptable, the Engineer will review the Final Closeout submittals.

- D. Application for Final Payment: Submit Application for Final Payment in accordance with procedures and requirements of the General Conditions and Supplementary Conditions.
 - 1. The Engineer will prepare a Final Change Order, reflecting approved adjustments to the Contract Sum not previously made by other Change Orders.

1.02 CONFERENCES AFTER COMPLETION

- A. The Owner reserves the right to call for conferences commencing with the date of Completion and continuing for one year thereafter, for purposes of inspecting the Work and to plan correction of any deficiencies or failures discovered during this period.
 - 1. Attendance is required by Contractor's Project Manager, Engineer, Owners Project Representative and each applicator, installer, and supplier as the Owner may direct or the Contractor may wish to have present. All representatives attending such meetings shall be the same persons, or shall have the same powers and authority, as those attending progress meetings occurring prior to the Date of Completion.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01780

CLOSEOUT SUBMITTALS

PART 1 - GENERAL

1.00 PROJECT RECORD DOCUMENTS

- A. Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and shop drawings for preparing the record drawings.
 - 1. Where shop drawings are used, record a cross-reference at the corresponding location on the Contract Documents.
- B. Do not use Record Documents for construction purposes; protect from loss in a secure location. Mark-up these drawings to show clearly and completely the actual installation reflecting all changes made in the Work during construction.
 - 1. Mark whichever drawing is most capable of showing conditions accurately.
 - 2. Give particular attention to concealed elements that would be difficult to measure and record at a later date.
 - 3. Record new information that is important to the Owner, but was not shown on the Contract Drawings or shop drawings.
- C. Deliver all Project Record Documents, shop drawings, product data, and samples to the Engineer for the Owners use, upon completion of the Work and prior to request for Final Acceptance of the Work.
- D. In addition at the completion of the work, the Contractor is responsible for the preparation and submittal of neat, clean well drafted, and complete record drawings, at no additional costs to the Owner. These reproducible Project Record Documents shall be transmitted to the Engineer as a condition precedent to final payment, and include documents prepared by the food service, fire protection, plumbing, mechanical and electrical trades.
 - 1. Submittal requirements for Record Drawings:
 - a. 1 "blackline print" set of Drawings.

1.01 OPERATION AND MAINTENANCE MANUALS

- A. Prepare data in the form of an instructional manual. Furnish manuals which contain all of the equipment and systems installed in the building.
- B. Provide one (1) bound and properly identified Manuals prior to request for Final Acceptance.
 - 1. Manuals shall be in 8-1/2 by 11 inch pages and bound in binders with durable plastic covers. Internally subdivide the binder contents with permanent page dividers.
 - a. Arrange content by section number and systems, process flow, under section numbers and sequence as listed in the Table of Contents of this Project Manual.
 - a. Drawings: Preferable 11 inches in height bound in with text with reinforced punched binder tab. Fold drawings larger than 8-1/2 by 11 inches to size of text pages. Provide a drawing pocket for Drawings larger than 11 by 17 inches larger drawings; locate pocket inside rear cover or bound in with text.

2. Each manual shall include the same following minimum information:
 - a. Table of Contents
 - b. Directory of Contractor, subcontractors, and major equipment supplies listing addresses, phone numbers and appropriate emergency phone numbers.
 - 1) Include local sources of supplies and replacement parts. Directory of Engineer and consultants listing addresses and phone numbers.
 - c. Operation and maintenance instructions. Provide schematic diagrams of control systems, circuit directories for each electric panel and charts showing the tagging of all valves.
 - d. Maintenance and cleaning instructions for finishes.
 - e. Product and manufacturers Certificates
 - f. Photocopies of all extended warranties and bonds.
3. Submit one copy of completed volume in final form 21 days prior to Final Inspection. This copy will be returned after final inspection with Engineer's comments; Revise and submit all volumes to Owner.

1.02 PRODUCT WARRANTIES AND BONDS

- A. Categories of Specific Warranties: Warranties on the work are in several categories, including those of General Conditions, and including (but not necessarily limited to) the following specific categories related to individual units of work specified in sections of Divisions 2 through 16 of these Specifications:
 1. Special Project Warranty (Guaranty): A warranty specifically written and signed by contractor for a defined portion of the work; and, where required, countersigned by subcontractor, installer, manufacturer or other entity engaged by Contractor.
 2. Specified Product Warranty: A warranty which is required by Contract Documents, to be provided for a manufactured product incorporated into the work; regardless of whether manufacturer has published a similar warranty without regard for specific incorporation of product into the work, or has written and executed a special project warranty as a direct result of Contract Document requirements.
 3. Coincidental Product Warranty: A warranty not specifically required by Contract Documents (other than as specified in this Section), but which is available on a product incorporated into the work, by virtue of the fact that manufacturer or product has published warranty in connection with purchases and use of product without regard for specific applications except as otherwise limited by terms of warranty.
- B. Refer to individual section of Divisions for the determination of units of work which are required to be specifically or individually warranted, and for the specific requirements and terms of those warranties (or guarantees).
- C. General Limitations: It is recognized that specific warranties are intended primarily to protect Owner against failure of the work to perform as required, and against deficient, defective, and faulty materials and workmanship, regardless of sources. Except as otherwise indicated, specific warranties do not cover failures in the work which result from: 1) Unusual and abnormal phenomena of the elements, 2) The Owner's misuse, maltreatment or improper maintenance of the work, 3) Vandalism after time of substantial completion, or 4) Insurrection or acts of aggression, including war.
- D. Related Damages and Losses: In connection with Contractor's correction of warranted work which has failed, remove and replace other work of project which has been damaged as a result of such failure, or must be removed and replaced to provide access for correction of warranted work.

1. Consequential Damages: Except as otherwise indicated or required by governing regulations, special project warranties and product warranties are not extended to cover damage to building contents (other than work of Contract) which occurs as a result of failure of warranted work.
- E. Reinstatement of Warranty Period: Except as otherwise indicated, when work covered by a special project warranty or product warranty has failed and has been corrected by replacement or restoration, reinstate warranty by written endorsement for the following time period, starting on date of acceptance of replaced or restored work.
 1. A period of time ending upon date original warranty would have expired if there had been no failure, but not less than half of original warranty period of time.
- F. Replacement Cost, Obligations: Except as otherwise indicated, costs of replacing or restoring failing warranted units or products is Contractor's obligation, without regard for whether Owner has already benefited from use through a portion of anticipated useful service lives.
- G. Rejection of Warranties: Owner reserves the right, at time of substantial completion or thereafter, to reject coincidental product warranties submitted by Contractor, which in opinion of Owner tend to detract from or confuse interpretation of requirements of Contract Documents.
- H. Contractor's Procurement Obligations: Do not purchase, subcontract for, or allow others to purchase or sub-subcontract for material or units of work for project where a special project warranty, certification or similar commitment is required, until it has been determined that entities required to countersign such commitments are willing to do so.
- I. Specific Warranty Forms: Where a special project warranty (guaranty) or specified product warranty is required, prepare a written document to contain terms and appropriate identification, ready for execution by required parties. Submit draft to Owner (through Engineer) for approval prior to final executions.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 02070

SELECTIVE DEMOLITION

PART 1 - GENERAL

1.00 RELATED DOCUMENTS:

- A. Drawings and general provisions of contract, including general and supplementary conditions and division 1 specification sections, apply to this section.

1.01 SUMMARY:

- A. This section requires the selective removal and subsequent offsite disposal of the following:
 - 1. Portions of existing concrete pad building indicated on drawings and as required to accommodate new construction.

1.02 SUBMITTALS

- A. General: submit the following in accordance with conditions of contract and division 1 specification sections.
- B. Photographs of existing conditions of structure surfaces, equipment, and adjacent improvements that might be misconstrued as damage related to removal operations. File with owner's representative prior to start of work.

1.03 JOB CONDITIONS

- A. Occupancy: owner will occupy portions of the building immediately adjacent to areas of selective demolition. Conduct selective demolition work in manner that will minimize need for disruption of owner's normal operations. Provide minimum of 72 hours advance notice to owner of demolition activities that will affect owner's normal operations.
- B. Condition of structures: owner assumes no responsibility for actual condition of items or structures to be demolished.
 - 1. Conditions existing at time of inspection for bidding purposes will be maintained by owner insofar as practicable. However, minor variations within structure may occur by owner's removal and salvage operations prior to start of selective demolition work.
- C. Protections: provide temporary barricades and other forms of protection to protect owner's personnel and general public from injury due to selective demolition work.
 - 1. Provide protective measures as required to provide free and safe passage of owner's personnel and general public to occupied portions of building.
 - 2. Erect temporary covered passageways as required by authorities having jurisdiction.
 - 3. Provide exterior shoring, bracing, or support to prevent movement, settlement, or collapse of structure or element to be demolished and adjacent facilities or work to remain.
 - 4. Protect from damage existing finish work that is to remain in place and becomes exposed during demolition operations.
 - 5. Provide temporary weather protection during interval between demolition and removal of existing construction on exterior surfaces and installation of new construction to ensure that no water leakage or damage occurs to structure or interior areas of existing building.
 - 6. Remove protections at completion of work.
- D. Damages: promptly repair damages caused to adjacent facilities by demolition work.

- E. Traffic: conduct selective demolition operations and debris removal to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities.
 - 1. Do not close, block, or otherwise obstruct streets, walks, or other occupied or used facilities without written permission from authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
- F. Flame cutting: do not use cutting torches for removal until work area is cleared of flammable materials. At concealed spaces, such as interior of ducts and pipe spaces, verify condition of hidden space before starting flame-cutting operations. Maintain portable fire suppression devices during flame-cutting operations.
- G. Utility services: maintain existing utilities indicated to remain in service and protect them against damage during demolition operations.
 - 1. Do not interrupt utilities serving occupied or used facilities, except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to governing authorities.
 - 2. Maintain fire protection services during selective demolition operations.
- H. Environmental controls: use water sprinkling, temporary enclosures, and other methods to limit dust and dirt migration. Comply with governing regulations pertaining to environmental protection.
 - 1. Do not use water when it may create hazardous or objectionable conditions such as ice, flooding, and pollution.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.00 PREPARATION

- A. General: provide exterior shoring, bracing, or support to prevent movement, settlement, or collapse of areas to be demolished and adjacent facilities to remain.
 - 1. Cease operations and notify owner's representative immediately if safety of structure appears to be endangered. Take precautions to support structure until determination is made for continuing operations.
 - a. Provide weatherproof closures for exterior openings resulting from demolition work.
 - 2. Locate, identify, stub off, and disconnect utility services that are not indicated to remain.
 - a. Provide bypass connections as necessary to maintain continuity of service to occupied areas of building. Provide minimum of 72 hours advance notice to owner if shutdown of service is necessary during changeover.

3.01 DEMOLITION

- A. General: perform selective demolition work in a systematic manner. Use such methods as required to complete work indicated on drawings in accordance with demolition schedule and governing regulations.
 - 1. Demolish concrete and masonry in small sections. Cut concrete reinforcing rods and masonry at junctures with construction to remain using power-driven masonry saw or hand tools; do not use power-driven impact tools.
 - 2. Locate demolition equipment throughout structure and promptly remove debris to avoid imposing excessive loads on supporting walls, floors, or framing.
 - 3. Provide services for effective air and water pollution controls as required by local authorities having jurisdiction.

4. Demolish and remove at grade concrete slabs.
- B. If unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure both nature and extent of the conflict. Submit report to owner's representative in written, accurate detail. Pending receipt of directive from owner's representative, rearrange selective demolition schedule as necessary to continue overall job progress without undue delay.

3.02 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove from building site debris, rubbish, and other materials resulting from demolition operations. Transport and legally dispose off site.
 1. If hazardous materials are encountered during demolition operations, comply with applicable regulations, laws, and ordinances concerning removal, handling, and protection against exposure or environmental pollution.
 2. Burning of removed materials is not permitted on project site.

3.03 CLEANUP AND REPAIR:

- A. General: upon completion of demolition work, remove tools, equipment, and demolished materials from site. Remove protections and interior areas clean.
 1. Repair demolition performed in excess of that required. Return elements of construction and surfaces to remain to condition existing prior to start operations. Repair adjacent construction or surfaces soiled or damaged by selective demolition work.

END OF SECTION

SECTION 02222

EXCAVATING

PART 1 - GENERAL

1.00 SECTION INCLUDES

- A. Excavating for slabs-on-grade and paving.

1.01 RELATED SECTIONS

- A. Geotechnical Report; bore hole locations and findings of subsurface materials.
- B. Soil Management Plan; bore hole locations and findings of subsurface materials.
- C. Section 01450 - Quality Control
- D. Section 01500 - Temporary Facilities and Controls
- E. Section 02223 - Backfilling.

1.02 FIELD MEASUREMENTS

- A. Verify that survey bench mark and intended elevations for the Work are as indicated.

PART 2 - PRODUCTS

2.00 NOT USED.

PART 3 - EXECUTION

3.00 PREPARATION

- A. Identify required lines, levels, contours, and datum locations.
- B. Locate, identify, and protect utilities that remain from damage.
- C. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

3.01 EXCAVATING

- A. Underpin adjacent structures which may be damaged by excavating work.
- B. Excavate subsoil to accommodate slabs-on-grade paving, and construction operations.
- C. Compact disturbed load bearing soil to original bearing capacity; perform compaction in accordance with Section 02223 and 02225.
- D. Grade top perimeter of excavating to prevent surface water from draining into excavation.
- E. Hand trim excavation. Remove loose matter.
- F. Notify Owner of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.
- G. Correct areas over excavated in accordance with Section 02223.
- H. Stockpile excavated material in area designated on site; remove excess or unsuitable material from site.

3.02 FIELD QUALITY CONTROL

- A. Section 01450 - Quality Control
- B. Provide for visual inspection of bearing surfaces.

3.03 PROTECTION

- A. Prevent displacement or loose soil from falling into excavation; maintain soil stability.
- B. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.

END OF SECTION

SECTION 02223

BACKFILLING

PART 1 - GENERAL

1.00 SECTION INCLUDES

- A. Fill under slabs-on-grade.
- B. Fill under paving.
- C. Fill for over-excavation.
- D. Consolidation and compaction.

1.01 RELATED SECTIONS

- A. Geotechnical Report; bore hole locations and findings of subsurface materials.
- B. Soil Management Plan; bore hole locations and findings of subsurface materials.
- C. Section 01500 - Quality Control
- D. Section 02225 - Trenching: Backfilling of utility trenches.
- E. Section 03300 - Cast-in-Place Concrete: Concrete materials.

1.02 REFERENCES

- A. ASTM D1556 - Test Method for Density of Soil in Place by the Sand-Cone Method.
- B. ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb (4.54 Kg) Rammer and 18 inch (457 mm) Drop.
- C. ASTM D2922 - Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
- D. ASTM D3017 - Test Methods for Moisture Content of Soil and Soil-Aggregate Mixtures.

PART 2 - PRODUCTS

2.00 FILL MATERIALS

- A. Fill Type shall be as noted on the Drawings.

PART 3 - EXECUTION

3.00 EXAMINATION

- A. Verify subdrainage, dampproofing, or waterproofing installation has been inspected.

3.01 PREPARATION

- A. Compact subgrade to density requirements for subsequent backfill materials.
- B. Cut out soft areas of subgrade not capable of compaction in place. Backfill and compact to density equal to or greater than requirements for subsequent fill material.
- C. Scarify and proof roll subgrade surface to a depth of 8 inches to identify soft spots; fill and compact to density equal to or greater than requirements for subsequent fill material.

3.02 BACKFILLING

- A. Backfill areas to contours and elevations with unfrozen materials.
- B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces.
- C. Employ a placement method that does not disturb or damage other work.
- D. Maintain optimum moisture content of backfill materials to attain required compaction density.
- E. Backfill against supported foundation walls. Do not backfill against unsupported foundation walls.
- F. Backfill simultaneously on each side of unsupported foundation walls until supports are in place.
- G. Slope grade away from building minimum 2 inches in 10 ft, unless noted otherwise.
- H. Make gradual grade changes. Blend slope into level areas.
- I. Remove surplus backfill materials from site.
- J. Leave fill material stockpile areas free of excess fill materials.

3.03 TOLERANCES

- A. Top Surface of Backfilling Under Paved Areas: Plus or minus 1 inch from required elevations.
- B. Top Surface of General Backfilling: Plus or minus 1 inch from required elevations.

3.04 FIELD QUALITY CONTROL

- A. Section 01450 - Quality Control.
- B. Compaction testing will be performed in accordance with ASTM D1556, ASTM D1557, ASTM D2922, and ASTM D3017.
- C. If tests indicate Work does not meet specified requirements, remove Work, replace and retest.
- D. Proof roll compacted fill surfaces under slabs-on-grade and paving.

3.05 PROTECTION OF FINISHED WORK

- A. Protect finished Work under provisions of Section 01500.
- B. Reshape and re-compact fills subjected to vehicular traffic.

END OF SECTION

SECTION 02510

ASPHALTIC CONCRETE PAVING

PART 1 - GENERAL

1.00 SECTION INCLUDES

- A. This item shall consist of surface and base courses composed of mineral aggregate and bituminous material mixed in a central mixing plant and placed on a prepared course in accordance with these specifications and shall conform to the lines, grades, thicknesses, and typical cross sections shown on the plans. Each course shall be constructed to the depth, typical section, or elevation required by the plans and shall be rolled, finished, and approved before the placement of the next course.

1.01 RELATED SECTIONS

- A. Section 02222 - Excavating
- B. Section 02223 - Backfilling
- C. Section 02225 - Trenching

1.02 REFERENCES

ASTM - C88-90 Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate

ASTM - D4791-95 Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate

ASTM - C29/C29M-97 Standard Test Method for Bulk Density ("Unit Weight") and Voids in Aggregate

ASTM - D4318-95a Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils

ASTM - D2419-95 Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate

ASTM - D75-97 Standard Practice for Sampling Aggregates

ASTM - C183-97 Standard Practice for Sampling and the Amount of Testing of Hydraulic Cement

ASTM - D242-95 Standard Specification for Mineral Filler For Bituminous Paving Mixtures

ASTM - D4867/D4867M-96 Standard Test Method for Effect of Moisture on Asphalt Concrete Paving Mixtures

ASTM - C136-96a Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates

ASTM - C117-95 Standard Test Method for Materials Finer than 75-[mm] (No. 200) Sieve in Mineral Aggregates by Washing

Asphalt Institute - MS-2 Mix Design Methods for Asphalt Concrete and Other Hot-Mix Types

ASTM - D3666-96a Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Bituminous Paving Materials

ASTM - D995-95b Standard Specification for Mixing Plants for Hot-Mixed, Hot-Laid Bituminous Paving Mixtures

AASHTO - M-226 Viscosity Graded Asphalt Cement

1.03 SUBMITTALS FOR REVIEW

- A. Section 01310 - Project Management and Coordination
 - 1. Data Reports and Certificates demonstrating compliance with the specified requirements.
 - 2. Gradation reports for coarse and fine aggregates in compliance with the specification herein.
 - 3. Asphaltic concrete mix design in accordance with Marshall Mix Design Method.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Deliver all asphaltic concrete to the site directly from the batch plant to ensure correct properties and temperature of the product for placement.

PART 2 - PRODUCTS

2.00 AGGREGATE -- AGGREGATES SHALL CONSIST OF CRUSHED STONE, CRUSHED GRAVEL, OR CRUSHED SLAG WITH OR WITHOUT SAND OR OTHER INERT FINELY DIVIDED MINERAL AGGREGATE. THE PORTIONS OF MATERIALS RETAINED ON THE NO. 8 SIEVE IS COARSE AGGREGATE. THE PORTION PASSING THE NO 8 (2.36 MM) SIEVE AND RETAINED ON THE NO.200 (0.075 MM) SIEVE IS FINE AGGREGATE, AND THE PORTIONS PASSING THE NO. 200 (0.075 MM) SIEVE IS MINERAL FILLER.

- A. Coarse Aggregate -- Coarse aggregate shall consist of sound, tough, durable particles, free from adherent films of matter that would prevent thorough coating and bonding with the bituminous material and be free from organic matter and other deleterious substances. The percentage of wear shall not be greater than 40% for surface course, and 50 % for base course when tested in accordance with ASTM C131. The sodium sulfate soundness loss shall not exceed 10%, or the magnesium sulfate soundness loss shall not exceed 13%, after five cycles, when tested in accordance with ASTM C88.
 - 1. Aggregate shall contain at least 70% by weight of individual pieces having 2 or more fractured faces and 85% by weight having at least 1 fractured face. The area of each face shall be equal to at least 75% of the smallest mid-sectional area of the piece. When 2 fractured faces are contiguous, the angle between the planes of fractures shall be at least 30° to count as 2 fractured faces. Fractured faces shall be obtained by crushing.
 - 2. The aggregate shall not contain more than 8%, by weight, of flat or elongated pieces, when tested in accordance with ASTM D4791.
- B. Fine Aggregate -- Fine aggregate shall consist of clean, sound, durable, angular shaped particles produced by crushing stone, slag, or gravel that meets the requirements for wear and soundness specified for course aggregate. The aggregate particles shall be free from coatings of clay, silt, or other objectionable matter and shall contain no clay balls. The fine aggregate, including any blended material for the fine aggregate, shall have a plasticity index of not more than 6 and a liquid limit of not more than 25 when tested in accordance with ASTM D4318.
 - 1. Natural (non-manufactured) sand may be used to obtain the gradation of the aggregate blend or to improve the workability of the mix. The amount of sand to be added will be adjusted to produce mixtures conforming to requirements of this Specification. The fine aggregate shall not contain more than 20 percent natural sand by weight of total aggregates.
 - 2. The aggregate shall have sand equivalent values of 35 or greater when tested in accordance with ASTM D2419.
- C. Mineral Filler -- If filler, in addition to that naturally present in the aggregate, is necessary, it shall meet the requirements of ASTM D242.

2.01 BITUMINOUS MATERIAL

- A. Bituminous material shall be viscosity graded asphalt cement AC-20 with a minimum penetration of 60 in accordance with AASHTO M226, Table 2.

2.02 COMPOSITION OF MIXTURE

- A. The bituminous plant mix shall be composed of a mixture of well-graded aggregate, filler if required, and bituminous material. The several aggregate fractions shall be sized, handled in separate size groups, and combined in such proportions that the resulting mixture meets the grading requirements of the job mix formula (JMF).

2.03 JOB MIX FORMULA

- A. No bituminous mixture for payment shall be produced until a job mix formula has been approved by the Engineer. The bituminous mixture shall be designed using procedures contained in Chapter III, MARSHALL METHOD OF MIX DESIGN of the Asphalt Institute's Manual Series No. 2 (MS-2), Mix Design Methods for Asphalt Concrete, and shall meet the requirements of Tables 1 and 2.

- B. The Design Criteria in Table 1 are target values necessary to meet the acceptance requirements. The criteria is based on a production process which has a material variability with the following deviations:

$$\begin{aligned}\text{Stability (lbs.)} &= 270 \\ \text{Flow (0.01 inch)} &= 1.5 \\ \text{Air Voids (\%)} &= 0.65\end{aligned}$$

- C. If material variability exceeds the standard deviations indicated, the job mix formula and subsequent production targets should be based on a stability greater than shown in Table 1, and the flow and air voids should be targeted close to the mid-range of the criteria in order to meet the acceptance requirements.

- D. If the Tensile Strength Ratio (TSR) of the composite mixture, as determined by ASTM D4867, is less than 75, the aggregates shall be rejected or the asphalt treated with an approved anti-stripping agent. The amount of anti-stripping agent added to the asphalt shall be sufficient to produce a TSR of not less than 75. If an anti-strip agent is required, it will be provided by the Contractor at no additional cost.

- E. The job mix formula shall be submitted in writing by the Contractor to the Engineer at least 30 days prior to the start of paving operations and shall include as a minimum:

1. Percent passing each sieve size.
2. Percent of asphalt cement.
3. Asphalt viscosity or penetration grade.
4. Number of blows of hammer compaction per side of molded specimens.
5. Mixing temperature.
6. Compaction temperature.
7. Temperature of mix when discharged from the mixer.
8. Temperature-viscosity relationship of the asphalt cement.
9. Plot of the combined gradation on the Federal Highway Administration (FHWA) 45 power gradation curve.
10. Graphical plots of stability, flow, air voids, voids in the mineral aggregate, and unit weight verses asphalt content.
11. Percent natural sand.
12. Percent fractured faces.
13. Percent elongated particles.
14. Tensile Strength Ratio (TSR).
15. Anti-strip agent (if required).

- F. The Contractor shall submit samples to the Engineer, upon request, for job mix formula verification testing.

- G. The job mix formula for each mixture shall be in effect until modified in writing by the Engineer. Should a change in sources of materials be made, a new job mix formula must be approved by the Engineer before the new material is used.

TABLE 1 - MARSHALL DESIGN CRITERIA

Test Property	
Number of blows	75
Stability, pounds (newtons) minimum	2,150 (9,555)
Flow, 0.01 in. (0.25 mm)	10-14
Air voids (percent)	2.8 - 4.2
Percent voids in mineral aggregate minimum	See Table 2

TABLE 2 - MINIMUM PERCENT VOIDS IN MINERAL AGGREGATE

Maximum Particle Size		Minimum Voids in Mineral Aggregate, Percent
In.	mm.	Percent
1/2	12.5	16
3/4	19.0	15
1	25.0	14
1-1/4	31.25	13

- H. The mineral aggregate shall be of such size that the percentage composition by weight, as determined by laboratory screens, will conform to the gradation or gradations specified in Table 3 when tested in accordance with ASTM Standards C136 and C117.
- I. The gradations in Table 3 represent the limits which shall determine the suitability of aggregate for use from the sources of supply. The aggregate, as selected (and used in the JMF) shall have a gradation within the limits designated in Table 3 and shall not vary from the low limit on one sieve to the high limit on the adjacent sieve, or vice versa, but shall be well graded from coarse to fine.
- J. Deviations from the final approved mix design for bitumen content and gradation of aggregates shall be within the action limits for individual measurements as specified in Paragraph 2.04L. The limits still will apply if they fall outside the master grading band in Table 3.
- K. The maximum size aggregate used shall not be more than 1/2 of the thickness of the course being constructed.

TABLE 3 - AGGREGATE - BITUMINOUS PAVEMENTS

Sieve Size	Percentage by Weight Passing Sieves	
	Base Course	Surface Course
1-1/4 inch (30.0 mm)	100	--
1 inch (24.0 mm)	86-98	--
3/4 inch (19.0mm)	68-93	100
1/2 inch (12.5 mm)	57-81	79-99
3/8 inch (9.5 mm)	49-69	68-88
No. 4 (4.75 mm)	34-54	48-68
No. 8 (2.36 mm)	22-42	33-53
No. 16 (1.18 mm)	13-33	20-40
No. 30 (0.600 mm)	8-24	14-30
No. 50 (0.300 mm)	6-18	9-21

No. 100 (0.150 mm)	4-12	6-16
No. 200 (0.075 mm)	3-6	3-6
Asphalt Percent		
Stone or Gravel	4.5 - 7.0	5.0 - 7.5
Slag	5.0 - 7.5	6.5 - 9.5

The aggregate gradations shown are based on aggregates of uniform specific gravity. The percentages passing the various sieves shall be corrected when aggregates of varying specific gravities are used, as indicated in the Asphalt Institute Manual Series No. 2 (MS-2), Appendix A.

- L. Control Charts -- The Contractor shall maintain linear control charts both for individual measurements and range (i.e. difference between highest and lowest measurements) for aggregate gradation and asphalt content.
1. Control charts shall be posted in a location satisfactory to the Engineer and shall be kept current. As a minimum, the control charts shall identify the project number, the contract item number, the test number, each test parameter, the Action and Suspension Limits applicable to each test parameter, and the Contractor's test results. The Contractor shall use the control charts as part of a process control system for identifying potential problems and assignable causes before they occur. If the Contractor's projected data during production indicates a problem and the Contractor is not taking satisfactory corrective action, the Engineer may suspend production or acceptance of the material.
 - a. Individual Measurements: Control charts for individual measurements shall be established to maintain process control within tolerance for aggregate gradation and asphalt content. The control charts shall use the job mix formula target values as indicators of central tendency for the following test parameters with associated Action and Suspension Limits:

TABLE 3A - CONTROL CHART LIMITS FOR INDIVIDUAL MEASUREMENTS

<u>Sieve Size</u>	<u>Action Limit</u>	<u>Suspension Limit</u>
3/4 inch (19.0mm)	0%	0%
1/2 inch (12.5 mm)	±6%	±9%
3/8 inch (9.5 mm)	6%	±9%
No. 4 (4.75 mm)	±6%	±9%
No. 16 (1.18 mm)	±5%	±7.5%
No. 50 (0.300 mm)	±13%	±4.5%
No. 200 (0.075 mm)	±2%	±3%
Asphalt Content	±0.45%	±0.70%

PART 3 - EXECUTION

3.00 WEATHER LIMITATIONS

- A. The bituminous mixture shall not be placed upon a wet surface or when the surface temperature of the underlying course is less than specified in Table 4. The temperature requirements may be waived by the Engineer, if requested; however, all other requirements including compaction shall be met.

TABLE 4 - BASE TEMPERATURE LIMITATIONS

Mat Thickness	Base Temperature (Minimum)	
	Deg F.	Deg. C
3 in (7.5 cm) or greater	40	4

Greater than 1 inch (2.5 cm) but less than 3 inch (7.5 cm)	45	7
1 inch (2.5 cm) or less	50	10

3.01 BITUMINOUS MIXING PLANT -- PLANT USED FOR THE PREPARATION OF BITUMINOUS MIXTURES SHALL CONFORM TO THE REQUIREMENTS OF ASTM D995.

3.02 HAULING EQUIPMENT

- A. Trucks used for hauling bituminous mixtures shall have tight, clean, and smooth metal beds. To prevent the mixture from adhering to them, the truck beds shall be lightly coated with a minimum amount of paraffin oil, lime solution, or other approved material. Each truck shall have a suitable cover to protect the mixture from adverse weather. When necessary, to ensure that the mixture will be delivered to the site at the specified temperature, truck beds shall be insulated or heated and covers shall be securely fastened.

3.03 BITUMINOUS PAVERS

- A. Bituminous pavers shall be self-propelled, with an activated screed, heated as necessary, and shall be capable spreading and finishing courses of bituminous plant mix material which will meet the specified thickness, smoothness and grade. The paver shall have sufficient power to propel itself and the hauling equipment without adversely affecting the finished surface.
- B. The paver shall have a receiving hopper of sufficient capacity to permit a uniform spreading operation. The hopper shall be equipped with a distribution system to place the mixture uniformly in front of the screed without segregation. The screed shall effectively produce a finished surface of the required evenness and texture without tearing, shoving, or gouging the mixture.

3.04 ROLLERS

- A. Rollers of the vibratory, steel wheel, and pneumatic-tired type shall be used. They shall be in good condition, capable of operating at slow speeds to avoid displacement of the bituminous mixture.
- B. The number, type and weight of rollers shall be sufficient to compact the mixture to the required density while it is still in a workable condition.
- C. The use of equipment which causes excessive crushing of the aggregate will not be permitted.

3.05 PREPARATION OF BITUMINOUS MATERIAL

- A. The bituminous material shall be heated in a manner that will avoid local overheating and provide a continuous supply of the bituminous material to the mixture at a uniform temperature. The temperature of the bituminous material delivered to the mixer shall be sufficient to provide a suitable viscosity for adequate coating of the aggregate particles, but shall not exceed 325 degrees F (160 degrees C).

3.06 PREPARATION OF MINERAL AGGREGATE

- A. The aggregate for the mixture shall be heated and dried prior to introduction into the mixer. The maximum temperature and rate of heating shall be such that no damage occurs to the aggregates. The temperature of the aggregate and mineral filler shall not exceed 350 degrees F (175 degrees C) when the asphalt is added. Particular care shall be taken that aggregates high in calcium or magnesium content are not damaged by overheating. The temperature shall not be lower than is required to obtain complete coating and uniform distribution on the aggregate particles and to provide a mixture of satisfactory workability.

3.07 PREPARATION OF BITUMINOUS MIXTURE

- A. The aggregates and the bituminous material shall be weighed or metered and introduced into the mixer in the amount specified by the job mix formula.

- B. The combined materials shall be mixed until the aggregate obtains a uniform coating of bitumen and is thoroughly distributed throughout the mixture. Wet mixing time shall be the shortest time that will produce a satisfactory mixture, but not less than 25 seconds for batch plants. The wet mixing time for all plants shall be established by the Contractor, based on the procedure for determining the percentage of coated particles described in ASTM D2489, for each individual plant and for each type of aggregate used. The wet mixing time will be set to achieve 95 percent of coated particles. For continuous mix plants, the minimum mixing time shall be determined by dividing the weight of its contents at operating level by the weight of the mixture delivered per second by the mixer. The moisture content of all bituminous mix upon discharge shall not exceed 0.5 percent.

3.08 PREPARATION OF THE UNDERLYING SURFACE

- A. Immediately before placing the bituminous mixture, the underlying course shall be cleaned of all dust and debris. A prime coat or tack coat shall be applied in accordance with Item P-602 or P-603, if required, by the Contract Specifications.

3.09 TRANSPORTING, PLACING AND FINISHING

- A. The bituminous mixture shall be transported from the mixing plant to the site in vehicles conforming to the requirements of Paragraph 3.03. Deliveries shall be scheduled so that placing and compacting of mixture is uniform with minimum stopping and starting of the paver. Adequate artificial lighting shall be provided night placements. Hauling over freshly placed material shall not be permitted until the material has been compacted, as specified, and allowed to cool to atmospheric temperature.
- B. The mix shall be placed and compacted at a temperature suitable for obtaining density, surface smoothness, and other specified requirements, but not less than 250 degrees F (107 degrees C).
- C. Upon arrival, the mixture shall be placed to the full width by a bituminous paver. It shall be struck off in a uniform layer of such depth that, when the work is completed, it shall have the required thickness and conform to the grade and contour indicated. The speed of the paver shall be regulated to eliminate pulling and tearing of the bituminous mat. Unless otherwise permitted, placement of the mixture shall begin along the centerline of a crowned section or on the high side of areas with a one-way slope. The mixture shall be placed in consecutive adjacent strips having a minimum width of 10 except where edge lanes require less width to complete the area. The longitudinal joint in one course shall offset the longitudinal joint in the course immediately below by at least 1 foot (30 cm); however, the joint in the surface top course shall be at the centerline of the pavement. Transverse joints in one course shall be offset by at least 10 feet (3 m) from transverse joints in the previous course.
 - 1. Transverse joints in adjacent lanes shall be offset a minimum of 10 feet (3 m).
- D. On areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impractical, the mixture may be spread and luted by hand tools.

3.10 COMPACTION OF MIXTURE

- A. After placing, the mixture shall be thoroughly and uniformly compacted by rolling. The surface shall be compacted as soon as possible when the mixture has attained sufficient stability so that the rolling does not cause undue displacement, cracking or shoving. The sequence of rolling operations and the type of rollers used shall be at the discretion of the Contractor. The speed of the roller shall, at all times, be sufficiently slow to avoid displacement of the hot mixture and be effective in compaction. Any displacement occurring as a result of reversing the direction of the roller, or from any other cause, shall be corrected at once.
- B. Sufficient rollers shall be furnished to handle the output of the plant. Rolling shall continue until the surface is of uniform texture, true to grade and cross section, and the required field density is obtained.
- C. To prevent adhesion of the mixture to the roller, the wheels shall be kept properly moistened (and scrapers used), but excessive water will not be permitted.
- D. In areas not accessible to the roller, the mixture shall be thoroughly compacted with hand tampers.
- E. Any mixture that become loose and broken, mixed with dirt, contains check-cracking, or in any way defective shall be removed and replaced with fresh hot mixture and immediately compacted to conform to the surrounding area. This work shall be done at the Contractor's expense. Skin patching shall not be allowed.

3.11 JOINTS

- A. The formation of all joints shall be made in such a manner as to ensure a continuous bond between the courses and obtain the required density. All joints shall have the same texture as other sections of the course and meet the requirements for smoothness and grade.
- B. The roller shall not pass over the unprotected end of the freshly laid mixture except when necessary to form a transverse joint. When necessary to form a transverse joint, it shall be made by means of placing a bulkhead or by tapering the course. The tapered edge shall be cut back to its full depth and width on a straight line to expose a vertical face prior to placing the adjacent lane. In both methods, all contact surfaces shall be given a tack coat of bituminous material before placing any fresh mixture against the joint.
- C. Longitudinal joints which are irregular, damaged, uncompacted, or otherwise defective shall be cut back to expose a clean, sound surface for the full depth of the course. All contact surfaces shall be given a tack coat of bituminous material prior to placing any fresh mixtures against the joint.
- D. Upon completion of surface course pavement, vertical butt joints shall be sealed or sawed and sealed with hot poured bituminous material in accordance with the Contract Drawings or as directed.

3.12 SHAPING EDGES

- A. While the surface is being compacted and finished, carefully trim the outside edges of the pavement to the proper alignment. Bevel edges while still hot with back of a rake or a smoothing iron, and thoroughly compacted by tampers, or by other satisfactory methods.

3.13 SURFACE TESTS

- A. Tests for conformity with the specified crown and grade shall be made by the Contractor immediately after initial compaction. Any variation shall be corrected by the removal or addition of materials and by continuous rolling.
- B. The finished surface shall not vary more than 1/4 inch for the surface course when tested with a 16 foot straightedge applied parallel with, or at right angles to, the centerline.
- C. After the completion of final rolling, the smoothness of the course shall again be tested; humps or depressions exceeding the specified tolerances shall be immediately corrected by removing the effective work and replacing with new material.
- D. The finished surfaces of the bituminous course shall not vary from the grade line, elevation or cross sections shown on the Contract Drawings by more than 1/2 inch. The Contractor shall correct pavement areas varying in excess of this amount by removing and replacing the defective work. Skin patching will not be permitted.

3.14 SAMPLING PAVEMENT

- A. Core samples for determination of thickness and density of completed pavements shall be obtained by the Contractor, as requested by the Engineer. Samples shall be neatly cut with a saw, core drill, or other approved equipment. The Contractor shall furnish all tools, lab or, and materials for cutting samples and replacing pavement. Fill core holes with fresh, hot mix and compact.

END OF SECTION

DIVISION 3

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.00 GENERAL

- A. Attention is directed to DIVISION 1 GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.
- B. Examine all drawings and all other sections of the specifications for requirements therein affecting the work of this trade.

1.01 WORK TO BE PERFORMED

- A. The work under this section consists of furnishing all labor, materials, equipment and services required to complete all concrete work as indicated on the drawings and as specified herein, and includes, but is not limited to the following:
 - 1. Furnishing, setting forms, placing, finishing, curing and protection of all cast-in-place Portland cement reinforced concrete for new equipment pad. The pad shall be furnished for, but not limited to, the recovering of the existing below grade fuel oil storage tank.
 - 2. All other items of concrete, cement finish and related work specified or obviously needed to make the work of this section complete.
- B. RELATED SECTIONS
 - 1. Division 1 - General Requirements
 - 2. Section 02050 - Demolition

1.02 COORDINATION OF WORK

- A. The Contractor shall coordinate the work of this section with the work of other trades, affecting the proper installation of the work under this section.

1.03 REQUIREMENTS OF REGULATORY AGENCIES

- A. The Contractor shall keep available on the site, for reference at any time, the following literature, including latest revisions which are hereby included in and made part of these specifications.
 - 1. Massachusetts State Building Code, latest issue
 - 2. ACI 347, Recommended Practice for Concrete Formwork
 - 3. ACI 605, Recommended Practice for Hot Weather Concreting
 - 4. ACI 309, Consolidation of Concrete
 - 5. ACI 613, Recommended Practice for Selecting Properties for Concrete
 - 6. ACI 614, Recommended Practice for Measuring, Mixing, and Placing Concrete
- B. Any material or operation specified by reference to the published specifications of a manufacturer, the American Concrete Institute (ACI), the Concrete Reinforcing Steel Institute (CRSI), the American Society for Testing and Materials (ASTM), the American Welding Society (AWS), the National Ready-Mixed Concrete Association (NRMCA), or other published standards, shall comply with the standard listed. In case of conflict between the

referenced specifications, the one having the most stringent requirement shall govern. In case of conflict between the referenced specifications, and the project specifications, the project specifications shall govern.

1.04 INSPECTION, TESTING AND QUALITY CONTROL

- A. A testing agency may be selected by the Engineer and will be paid for by the Owner.
- B. Testing and approvals are required to aid the Contractor in adhering to the specification requirements and in no way are meant to be construed as relieving the Contractor of his responsibility to fulfill all the requirements of the contract documents.
- C. Those portions of the structure that do not meet the contract requirements shall be corrected or removed and replaced as directed by the Engineer and all cost of corrections, removal and replacement shall be at the Contractor's expense.

1.05 SUBMITTALS

- A. Submit shop drawings in accordance with applicable requirements under Division 1 and as follows:
 - 1. The Contractor shall submit to the Engineer for review two checked prints and one reproducible of all shop drawings until approved. Any corrections required by the Engineer shall be made immediately and corrected copies (reproducibles and prints) of the drawings affected shall be returned to the Engineer. Then, after final approval, copies shall be distributed by the Contractor. It is required that all shop drawings submitted for review shall be checked by the Contractor and so indicated. All drawings submitted without being checked and without bearing the Contractor's stamp of approval shall be returned without being reviewed by the Engineer.
 - 2. Submit reinforcement shop drawings showing detailed layouts, including materials, dimensions, spacing, and similar items required for the proper construction of the work.

PART 2 - MATERIALS

2.00 GENERAL REQUIREMENTS

- A. The following is a description of material requirements to be furnished for work within this section.
- B. Unless otherwise noted, when compliance with the referenced specifications, or this specification, is specified for materials or a manufactured or fabricated product, the Contractor shall furnish the Engineer with an affidavit from the manufacturer or fabricator certifying that the material or product delivered to the project meets all the requirements of the contract documents.
 - 1. Cement shall be American made Portland Cement, free from water soluble salts of alkalis which will cause efflorescence on exposed surfaces. Cement shall conform to all chemical and physical requirements of ASTM C150 for Type I and II. Type III Portland Cement shall not be used.
 - 2. Fine Aggregate (Normal Weight) shall consist of clean, hard, sound, durable sand, free from salt, loam and clay and shall conform to "Specifications for Concrete Aggregates" (ASTM C33).
 - 3. Coarse aggregate shall consist of clean, hard, durable, sound, gravel, crushed gravel, or crushed stone free from harmful amounts of soft, thin, elongated or laminated pieces, and shall conform to Size Grading for Severe Weathering Regions of ASTM Specifications C33.
 - 4. Peastone shall be a washed clean, hard, rounded gravel conforming to ASTM C-33, except that it shall be graded to 90% passing the 3/8" screen and 90% retained on the 1/4" screen.
 - 5. Mixing water for concrete shall be potable and from a domestic supply.
 - 6. Admixtures
 - a. A water-reducing agent conforming to ASTM C494 shall be used in all concrete.
 - b. Admixtures retarding setting of cement in concrete shall not be used.

- c. Admixtures causing accelerated setting of cement in concrete shall not be used. Calcium chloride shall not be used.
7. Concrete shall be reinforced with re-bars (4/8" diameter min. or other as noted on the drawings) 12" on center both ways at mid-point and 6" x 6" wire cloth. Re-bars shall be deformed bars and shall conform to the requirements of ASTM A-615, Grade 40. Wire cloth shall be deformed and shall conform to the requirements of ASTM A-82.

2.01 MIXES

A. Concrete Mixes

1. All concrete shall be ready-mixed produced by a plant acceptable to the Engineer. Hand or site mixing may be performed only with the prior approval of the Owner or Engineer. All constituents, including admixture, shall be batched at the central batch plant.
2. Materials shall be measured by weighing. The accuracy of all weighing devices shall be such that successive quantities can be measured to within one (1) percent of the indicated amount. Cement in standard packages (sack) need not be weighed. The mixing water shall be measured by volume or by weight. The water measuring device shall be accurate to 1/2%.
3. Central mixed concrete shall be plant mixed a minimum of five (5) minutes. Agitation shall begin immediately after the premixed concrete is placed in the truck and shall continue without interruption until discharged. Concrete shall be delivered and discharged within 1-1/2 hours or before the drum has revolved 300 times after introduction of water to the cement and aggregate.

2.02 CONCRETE STRENGTH

- A. Concrete shall have the minimum compressive strength at 28 days of 3,500 psi.
- B. The Contractor shall be responsible for establishing the basic concrete mixtures. He shall submit the results of the mixtures to the Engineer for acknowledgment and verification that mixtures conform in every respect to the contract requirements based on the materials supplied by the Contractor. The Contractor, after receiving verification from the Engineer, shall assume full responsibility for the final results to the completion of the contract. No concrete shall be cast until receipt of Engineer's verification.
- C. It is the intent of this section to secure, for every part of the work, concrete of homogeneous structure which, when hardened, will have the required strength, density, imperviousness to water, appearance, and resistance to wear and weathering. The actual proportions of constituents necessary to produce concrete conforming to the following specific requirements shall be determined by means of prior laboratory tests made with the constituents to be used in the work. Proportioning of concrete mixtures shall be carried out in accordance with Chapter 3 - PROPORTIONING OF CONCRETE MIXTURES - ACI 301, "Specifications for Structural Concrete for Buildings" and as specified herein.
- D. The following limiting strengths, water-cement ratios, cement factors, etc., as shown in TABLE A, shall apply for the specific strengths of concrete.

TABLE A

Minimum Allowable Compr. Str. @ 28 days psi	Max. Allowable Net Water Content Gals/Sack*	Minimum Permissible Cement Factor Sacks/Cu. Yd.**
<u>Normal Weight</u>		
3000	6.50	5.0

* Maximum: Decrease, if possible; this represents total water in mix at time of mixing, including free water on aggregate.

** Minimum: Increase as necessary to meet other stated requirements.

E. The approved water-reducing agent shall be added to all concrete.

F. The water content and cement content of the concrete to be used in the work shall be based on a curve showing the relation between water content, cement content and the 7 and 28 day compressive strengths of concrete made using the proposed materials. The curves shall be determined by four (4) or more points, each representing an average of at least three (3) test specimens at each age, and shall have a range of values sufficient to yield the desired data, without extrapolation. The design mix of the concrete to be used in the structure, as determined from the curve shall correspond to the following test strength (TABLE B) obtained in the laboratory trial mixtures, but, in no case, shall the resulting mix conflict with the limiting values as specified in TABLE A. Note that all concrete has been designed by ACI Ultimate Strength Design Method.

TABLE B

Minimum Strength of Lab Trial Mixes

Design Strength	7 days	Trial Mix Strength 28 Days
3500	2700	3750

PART 3 - INSTALLATION

3.00 INSTALLATION OF REINFORCED CONCRETE

A. Placing Concrete:

1. Transport concrete from mixer to place of final deposit as rapidly as practical by methods which prevent separation of the ingredients and avoid rehandling. Deposit no partially hardened concrete. If the discharge end of the chute is more than five feet above the surface of the concrete in forms, a spout shall be used, and the lower end maintained as near the surface of deposit as practicable. Concrete shall not be allowed to flow horizontally over a distance exceeding five feet.
2. Concrete shall be deposited continuously, and in layers of such thickness that no concrete will be deposited on concrete which has hardened sufficiently to cause the formation of seams and planes of weakness within the section.
3. Concrete, during and immediately after depositing, shall be thoroughly compacted by means of internal type mechanical vibrators to produce required quality of finish. All vibrators shall be operable and on site prior to starting placement.
4. After concrete has been placed, provide protection against rapid drying and after finishing operations.

B. Reinforcing

1. Concrete work shall be fastened to existing surfaces wherever and whenever practicable. Fastening shall be accomplished by using deformed #3 re-bars doweled a minimum of 4" into the existing surfaces at 4' O.C. (min.). Deformation of re-bar shall occur at approximately the mid-point in depth of the pour. Wire cloth shall be fastened to re-bar at deformation and shall be supported level.

C. Forms

1. Forms Construction: Forms shall be of new wood conforming to the shapes, lines, grades and dimensions required. Forms shall be of sufficient strength and shall be so braced to remain in correct position during and after depositing of concrete, insure adequate support until concrete has sufficient strength for removal of forms, and produce a plumb, true even concrete surface. Wood forms for exposed surfaces shall be plywood. Remove forms after concrete has set sufficiently to support its own weight and all loads upon it.

D. Finishing Concrete Surface

1. Cast-in-place concrete surfaces shall be finished as follows:
 - a. After the concrete has been placed, struck off, consolidated, screened, and floated, and before it has hardened appreciably, all water, firm, and foreign materials which may work to the surface shall be removed by means of lutes. Prior to removal of screeds, the surface shall be checked for trueness and level, and filled or cut down where necessary. Rough finishing shall be repeated with straightedge and float.

- b. The finished surface shall be a true plane within 1/8 inch in 10 feet as determined by a 10-foot straight-edge placed anywhere on the slab in any direction. Measurements shall be taken before removing supporting forms or shoring.
 - c. Housekeeping pads shall be finished all around with 3/4" chamfer on top edge and shall extend a minimum of 4" in all directions away from equipment that will be placed on them. Height to be 6" unless noted otherwise on plans.
 - 2. The Contractor, at his own expense, shall do all leveling and grinding of depressed and high spots in concrete surfaces in excess of the tolerances specified above. In areas where leveling materials are required to provide the proper surface, such materials shall be of a type approved by the Engineer.
- E. Curing, Protection, Form Removal
- 1. Protect all concrete work against injury from heat, cold, and defacement of any nature during construction operations.
 - 2. Concrete, particularly exposed surfaces, shall be treated immediately after concrete or cement finishing is completed to provide continuous moist curing above 50 degrees F. for at least six (6) days regardless of ambient air temperatures.
 - 3. NOTE: The purpose of moist curing is to continuously provide additional available water to the concrete to permit hydration of cement. Periodic sprinkling is not effective in curing, and will not be accepted as meeting curing requirements.
 - 4. Removal of forms shall not take place until concrete has cured sufficiently to support its own weight, retain its shape and support all loads upon it. The procedure for removing forms shall be such that no damage is done to the concrete during form removal.

END OF SECTION

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HEATING, VENTILATING AND AIR CONDITIONING

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SECTION 15500

HEATING, VENTILATING AND AIR CONDITIONING

(FILED SUB-BID REQUIRED)

PART 1 - GENERAL

1.00 GENERAL PROVISIONS

- A. The GENERAL REQUIREMENTS, DIVISION 1, and BIDDING AND CONTRACT REQUIREMENTS, DIVISION 0, and all proceeding SECTIONS are hereby made a part of this Specification Section.
- B. Examine all Drawings and all Sections of the Specifications and requirements and provisions affecting the work of this Section.

1.01 SCOPE OF WORK

- A. This project includes the demolition of existing oil tank vault concrete pad cover. Work also includes removal of existing tank well stick openings, fill caps and boxes, valves and street valve boxes and any cut back of piping to accept new fuel oil tank appurtenances and access chambers.
- B. The work under this Section shall include the furnishing of all materials, labor, equipment and supplies and the performance of all operations to provide complete working systems, in general, to include the following items:
 - 1. Piping and Fittings (all systems and types)
 - 2. Pipe Supports
 - 3. Identification
 - 4. Valves and Accessories (all types)
- C. The work to be done under this section is generally shown on the Mechanical Drawings.

1.02 RELATED WORK

- A. Principal classes of Work related to the Work of this Section are listed below, and are specified to be performed under the indicated Sections of these Specifications. Refer to the indicated Sections for description of the extent and nature of the indicated Work, and for coordination with related trades. This listing may not include all related Work items. It is the responsibility of the Contractor to coordinate the Work of this Section with that of all other trades.
- B. The following work is not included in this section and will be provided under other sections, except as specified herein:
 - 1. Temporary light, power, water, heat, gas and sanitary facilities for use during construction and testing. Refer to Division 1, General Conditions.
 - 2. Excavation and backfill.
 - 3. Concrete work including concrete pads and cast-in-place manholes.

1.03 PRODUCTS FURNISHED, BUT NOT INSTALLED UNDER THIS SECTION

- A. Furnish pipe sleeves for placement into formwork.
- B. Furnish access panels and street boxes for installation.

1. Furnish access panels and boxes for installation in pad at locations to permit access for adjustment, removal, replacement and servicing of all concealed equipment, valves and materials installed under this Section of the specifications.

1.04 DEFINITIONS

A. As used in this Section, the following terms shall be understood to have the following meaning:

1. **“Work”** shall mean all labor, materials, equipment, apparatus, controls, accessories and all other items required for a proper and complete installation.
2. **“Concealed”** shall mean hidden from sight in chases, furred in spaces, shafts, embedded in construction, in a crawl space, and above hung ceilings.
3. **“Exposed”** shall mean not installed underground or concealed as defined above.
4. **“Furnish”** shall mean purchase and deliver to the project site, complete with every necessary appearance and support.
5. **“Install”** shall mean unload at the delivery point at the site and perform all work necessary to establish secure mounting, proper location and operation in the project.
6. **“Provide”** shall mean furnish and install.
7. **“Piping”** shall mean, in addition to pipe or tubing, all fittings, flanges, grooved joint couplings, unions, valves, strainers, drains, hangers and other accessories relative to such piping.
8. **“Furnished by others”** shall mean materials or equipment purchased and set in place under other sections of the general contract and connected to the systems covered by this section of the specifications by this trade contractor.
9. **“Coordinate”** shall mean all work provided under this section of the specification shall be in compliance with work of other trades.
10. **“HVAC Subcontractor,” “Subcontractor,” or “Installing Contractor”** shall be the Subcontractor responsible for the Work of this Section of the Specifications, and shall be responsible for coordination of the Work of this Section of the Specifications with the Work of Section 15900, **BUILDING AUTOMATION SYSTEM** where applicable.
11. **“Owner’s Representative”** shall be the party responsible to make decisions regarding all contractual obligations in reference to the Scope of Work for the Owner.
12. **“Date of Substantial Completion”** shall indicate the date where the work has been formally accepted as evidenced by completed final punch list or where the work has reached the stage that the owner obtains beneficial use and commences utilization of the installed systems for business or occupancy purposes. The GENERAL REQUIREMENTS, DIVISION 1, shall supercede this definition where specifically defined.

1.05 CODES, REFERENCES AND PERMITS

A. Materials, installation of systems and equipment provided under this section shall be done in strict accordance with the latest governing edition of the following standards, codes, specifications, requirements, and regulations, and any other Codes and Regulations having jurisdiction including but not limited to:

1. All Applicable NFPA Standards
2. State and Local Building Mechanical, Electrical, and Energy Codes
3. American Society of Mechanical Engineers (ASME)

4. American Society of Testing and Materials (ASTM)
 5. American National Standards Institute (ANSI)
 6. Underwriters' Laboratories, Inc. (UL)
 7. Occupational Safety and Health Administration (OSHA)
 8. Any other local codes or authorities having jurisdiction.
- B. Piping systems shall be installed by contractors and personnel appropriately licensed in the State (Installing Contractor).
- C. Unless otherwise specified or indicated, materials, workmanship and equipment performance shall conform with the latest governing edition of the following standards, codes, specifications, requirements, and regulations, except when more rigid requirements are specified or are required by applicable codes but not limited to:
1. American National Standards Institute (ANSI)
 2. American Petroleum Institute (API)
 3. American Society of Mechanical Engineers (ASME).
 4. American Society of Testing and Materials (ASTM)
 5. American Welding Society, Inc. (AWS)
 6. Manufacturer's Standardization Society of the Valve & Fitting Industry (MSS)
- D. Codes, laws and standards provide a basis for the minimum installation criteria acceptable. The drawings and specifications illustrate the scope required for this project, which may exceed minimum codes, laws and standards.
- E. The date of the code or standard is that in effect at the Bid date.
- F. Give all notices, file all plans, obtain all permits and licenses, and obtain all necessary approvals from authorities having jurisdiction. Deliver all certificates of inspection to the authorities having jurisdiction. No work shall be covered before examination and approval by the Owner's Representative, inspectors, and authorities having jurisdiction. Replace imperfect or condemned work to conform to requirements, satisfactory to Owner's Representative, and without extra cost to the Owner. If work is covered before inspection and approval, this Contractor shall pay costs of uncovering and reinstalling the covering, whether it meets contract requirements or not.

1.06 GENERAL REQUIREMENTS

- A. Nameplates
1. Each item of equipment shall have a nameplate bearing the manufacturer's name, address, type or style, model number, catalog number, and serial number securely affixed in a conspicuous place; the nameplate of the distributing agent will not be acceptable.
- B. Maintenance Information
1. Systems and equipment which require periodic maintenance to maintain efficient operation shall be furnished with complete necessary maintenance information. Required routine maintenance actions, as specified by the manufacturer, shall be stated clearly and incorporated on a readily accessible label on the equipment. Such label may be limited to identifying, by title or publication number, the operation and maintenance manual for that particular model and type of product.
- C. Equipment Guards

1. Belts, pulleys, chains, gears, couplings, projecting setscrews, keys, and other rotating parts so located that any person may come in close proximity thereto shall be completely enclosed or guarded. High-temperature equipment and piping so located as to endanger personnel or create a fire hazard shall be guarded or covered with insulation of type specified for service.

1.07 MATERIAL AND EQUIPMENT STANDARDS

- A. Where equipment or materials are specified with the name of a manufacturer, such specification shall be deemed to be used for the purpose of establishing a standard for that particular item. No equipment or material shall be used unless previously approved by the Owner's Representative.
- B. Substitutions (approved equals) may be offered for review provided the material, equipment or process offered for consideration is equal in every respect to that indicated or specified. In order for Requests for substitution to be considered, all must be submitted for pre-approval of manufacturer within 30 days of award of contract. All requests must be accompanied by a list of minimum 5-year-old successful installations of similar scope (with owner contact and phone number), complete specifications together with drawings or samples to properly appraise the materials, equipment or process. Allow 30 days for Owner's Representative's review.
- C. If a substitution of materials or equipment in whole or in part is made, this HVAC Subcontractor shall bear the cost of any changes necessitated by any other trade as a result of said substitution.
- D. All materials, equipment and accessories provided under this section shall be new and unused products of recognized manufacturers as approved.

1.08 SUBMITTALS

- A. Conform to the requirements of **Division 1, General Conditions**, for schedule and form of all submittals unless specifically noted otherwise in this section. Coordinate this submittal with submittals for all other finishes. Shop drawings and design layouts shall be prepared by licensed installing contractors and shall note the name(s), license number(s) and license expiration date(s) of the contractor(s) installing the piping systems.
- B. Definitions:
 1. Shop Drawings are information prepared by the contractor to illustrate portions of the work in more detail than indicated in the Contract Documents.
 2. Acceptable Manufacturers: The mechanical design for each product is based on the single manufacturer listed in the schedule or shown on the drawings. In Part 2 of the specifications certain Alternate Manufacturers are listed as being acceptable. In addition, the MATERIAL AND EQUIPMENT STANDARDS paragraph potentially allows for substitutions as being acceptable. These are acceptable only if, as a minimum, they:
 - a. Meet all performance criteria listed in the schedules and outlined in the specifications. For example, to be acceptable, an air handling unit must deliver equal CFM against equal external static pressure (with the allowed pressure drop of dirty filters) using equal or less horsepower as the air handler listed in the schedules.
 - b. Fit within the available space it was designed for, including space for maintenance and component removal, with no modification to either the space or the product. Clearances to walls, ceilings, and other equipment will be at least equal to those shown on the design drawings. The fact that a manufacturer's name appears as acceptable shall not be taken to mean the Engineer has determined that the manufacturer's products will fit within the available space – this determination is solely the responsibility of the contractor.

- c. For rooftop mounted equipment and equipment mounted in areas where structural matters are a concern, the products must have a weight no greater than the product listed in the schedules or specifications.
- d. Products must adhere to all architectural considerations including, but not limited to: being of the same color as the product scheduled or specified, fitting within the architectural enclosures and details.

C. Submittal Procedures, Format and Requirements

1. Review submittal packages for compliance with Contract Documents and then submit to Owner's Representative for review. Submit enough sets of shop drawings such that, after review, two sets will be kept by the reviewer, with only the remaining sets returned with reviewer's marks and comments.
2. Each Shop Drawing shall indicate in title block, and each Product Data package shall indicate on cover sheet, the following information:
 - a. Title.
 - b. Equipment number.
 - c. Name and location of project.
 - d. Names of Owner, Engineer and Seller.
 - e. Names of manufacturers, suppliers, vendors, etc.
 - f. Date of submittal.
 - g. Whether original submittal or resubmitted.
3. Shop drawings showing manufacturer's product data shall contain detailed dimensional drawings (minimum $\frac{1}{4}" = 1'$ scale) including plans and sections (where physical clearance could be an issue). Provide larger scale details as necessary. Sheet metal drawings shall show elements of Architect's reflected ceiling plan, exposed ductwork, walls and partitions (highlighting fire walls and smoke partitions), diffusers, registers, grilles, all dampers (fire, smoke, balancing, backdraft, and control dampers), sleeves and other aspects of construction as necessary for coordination.
4. Submit accurate and complete description of materials of construction, manufacturer's published performance characteristics, sizes, weights, capacity ratings (performance data, alone, is not acceptable), electrical requirements, starting characteristics, wiring diagrams, and acoustical performance for complete assemblies. Drawings shall clearly indicate location (terminal block or wire number), voltage and function for all field terminations, and other information necessary to demonstrate compliance with all requirements of Contract Documents.
5. Provide shop drawings showing details of piping connections to all equipment. If connection details are not submitted and connections are found to be installed incorrectly, this contractor shall reinstall them within the original contract price.
 - a. Alternate pipe joining methods such as grooved and permanent push-to-connect systems shall be shown on drawings and product submittals, and be specifically identified with the applicable manufacturer's style or series number. Installation shall include any additional hangers required for the alternate system.
6. Provide complete data for all auxiliary services and utilities required by submitted equipment. This shall include power, cooling water and compressed air requirements and points of connection.

7. Provide a complete description of all controls and instrumentation required including electrical power connection drawing for all components and interconnection wiring to starters, detailed information on starters, control diagrams, termination diagrams, and all control interfaces with a central control system.
 8. Provide installation and erection information including; lifting requirements, and any special rigging or installation requirements for all equipment.
 9. The Owner's Representative shall approve all materials before commitment for materials is made.
- D. Product Data: Submit complete manufacturer's product description and technical information including:
1. Piping and Fittings (all services, types, and joining methods)
 2. Pipe Hangers and Supports
 3. Identification
 4. Sleeves
 5. Valves and Accessories (all types)
 6. O&M manual table of contents
 7. O&M manual
- E. Submit shop drawings and product data grouped to include complete submittals of related systems, products and accessories in an individual (combined) submittal.
1. Access panel shop drawings shall be submitted to the Construction Supervisor for approval.
 2. Do not submit multiple product information in a single bound manual.
 3. Three-ring binders shall not be accepted.
- F. Deviations
1. Concerning deviations other than substitutions, proposed deviations from Contract Documents shall be requested individually in writing whether deviations result from field conditions, standard shop practice, or other cause. Submit letter with transmittal of Shop Drawings which flags the deviation to the attention of the Owner's Representative.
 2. Without letters flagging the deviation to the Owner's Representative, it is possible that the Engineer may not notice such deviation or may not realize its ramifications. Therefore, if such letters are not submitted to the Owner's Representative, the Seller shall hold the Engineers, his consultants and the Owner harmless for any and all adverse consequences resulting from the deviations being implemented. This shall apply regardless of whether the Engineer has reviewed or approved shop drawings containing the deviation, and will be strictly enforced.
 3. Approval of proposed deviations, if any, will be made at discretion of Engineer.
- G. Schedule: Incorporate shop drawing review period into construction schedule so that Work is not delayed. This subcontractor shall assume full responsibility for delays caused by not incorporating the following shop drawing review time requirements into his project schedule: Allow at least 10 working days, exclusive of transmittal time, for review each time shop drawing is submitted.
- H. Responsibility

1. Intent of Submittal review is to check for capacity, rating, and certain construction features. HVAC contractor shall ensure that work meets requirements of Contract Documents regarding information that pertains to fabrication processes or means, methods, techniques, sequences and procedures of construction; and for coordination of work of this and other Sections. Work shall comply with approved submittals to extent that they agree with Contract Documents. Submittal review shall not diminish responsibility under this Contract for dimensional coordination, quantities, installation, wiring, supports and access for service, nor the shop drawing errors or deviations from requirements of Contract Documents. The Engineer's noting of some errors while overlooking others will not excuse the HVAC contractor from proceeding in error and will not absolve the contractor from meeting the full design intent of the associated system(s). Contract Documents requirements are not limited, waived nor superseded in any way by review.
 2. Inform subcontractors, manufacturers, suppliers, etc. of scope and limited nature of review process and enforce compliance with contract documents.
- I. In the event that the HVAC Subcontractor fails to provide Shop Drawings for any of the products specified herein:
1. The HVAC Subcontractor shall furnish and install all materials and equipment herein specified in complete accordance with these Specifications.
 2. If the HVAC Subcontractor furnishes and installs material and/or equipment that is not in complete accordance with these Specifications, he shall be responsible for the removal of this material and/or equipment. He shall also be responsible for the replacement of this material and/or equipment with material and/or equipment that is in complete accordance with these Specifications, at the direction of the Owner's Representative.
 3. Removal and replacement of materials and/or equipment that is not in complete compliance with these Specifications shall be done at no extra cost to the Owner.
 4. Removal and replacement of materials and/or equipment that is not in complete compliance with these Specifications shall not be allowed as a basis for a claim of delay of completion of the Work.
- J. Mark dimensions and values in units to match those specified.
- K. Submit Material Safety Data Sheets (MSD) on each applicable product with submittal.

1.09 OPERATION AND MAINTENANCE DATA

- A. Commence preparation of the Operating and Maintenance (O&M) Manuals immediately upon receipt of "Approved" or "Approved as Noted" shop drawings and submit each section within one month. The final submission shall be no later than two months prior to the projected date of Substantial Completion of the Project.
- B. Submit O&M table of contents in the submittal phase. O&M manuals shall be built as submittals are accepted and shall include the individual equipment manufacturer's data retrieval sheet, as per Attachment A in Part IV for input into the Owner's Maintenance Management System. Form shall be provided and completed electronically.
- C. Each O&M document shall include the manufacturer's web address for equipment -specific O&M information for Internet access by the Owner.
- D. The manual shall consist of (3) sets of manuals. The manual shall highlight the actual equipment used and not be a master catalog of all similar products of the manufacturer. The manual shall be submitted for review prior to creation of the CDs.
- E. Provide O&M manuals for each of the following as a minimum:

1. Pipe
2. Valves and Accessories (all types, including charts for all balancing valves)

1.10 RECORD DRAWINGS

- A. Refer to DIVISION 1, General Conditions, for record drawings and procedures to be provided under this section, unless specifically noted otherwise in this section.
- B. Record Drawings (red-line drawings) will be updated by this Contractor daily for review with the monthly requisition. The record drawing shall be an accurate depiction of the systems as completed, including dimensions (vertical/horizontal) of concealed components off fixed building elements.
- C. The HVAC Foreman shall maintain complete and separate set of prints of Contract Drawings at job site at all times and shall record work completed and all changes from original Contract Drawings clearly and accurately including work installed as a modification or addition to the original design.
- D. At completion of work the HVAC Contractor shall prepare a complete set of record drawings on AutoCAD showing all systems as actually installed. The Architectural background AutoCAD files will be made available for the contractor's copying, at his expense, to serve as backgrounds for the drawings. The HVAC Contractor shall transfer changes from field drawings onto AutoCAD drawings and submit copy of files and three sets of prints to Owner's Representative for comments as to compliance with this section. CADD layering as established by the A & E design team shall be maintained with any and all changes done by the contractor.
- E. The Architect and Engineer are not granting to the Contractor any ownership or property interest in the CADD Drawings by the delivery of the CADD Disks to the Contractor. The Contractor's rights to use the CADD disks and the CADD Drawings are limited to use for the sole purpose of assisting in the Contractor's performance of its contractual obligations under its contract with respect to the Project. The Architect and Engineer are granting no further rights. Any reuse or other use by the Contractor will be at the Contractor's sole risk and without liability to the Architect and Engineer. The Contractor hereby waives and releases any losses, claims, damages, liabilities of any nature whatsoever, and costs (including attorney fees) arising out of, resulting from, or otherwise related to the use of the CADD Disks and CADD Drawings by the Contractor. The Contractor, to the maximum extent permitted by law, hereby agrees to indemnify, defend and hold the Architect and Engineer harmless from all losses, claims, damages, liabilities, and costs (including attorney fees) arising out of, resulting from, or otherwise related to the use of the CADD Disks and CADD Drawings by the Contractor.
- F. Record Drawings, shall show "as-built" condition of all plans, details, sections, piping diagrams, control changes and corrections to schedules. Schedules shall show actual manufacturer model numbers and capacities of final installed equipment.
- G. The HVAC Contractor shall submit the record set for approval a minimum of two weeks prior to seeking the permanent certificate of occupancy.

1.11 WARRANTIES

- A. Submit manufacturer's standard replacement warranties for material and equipment furnished under this Section. Such warranties shall be in addition to and not in lieu of all liabilities which the manufacturer and the HVAC Subcontractor may have by law or by provisions of the Contract Documents.
- B. All materials, equipment and work furnished under this Section shall be guaranteed against all defects in materials and workmanship for a minimum period of one year commencing with the Date of Substantial Completion. Where individual equipment sections specify longer warranties, provide the longer warrantee. Any failure due to defective material, equipment or workmanship which may develop, shall be corrected at no expense to the Owner including all damage to areas, materials and other systems resulting from such failures.

- C. Guarantee that all elements of each system meet the specified performance requirements as set forth herein or as indicated on the Drawings.
- D. Upon receipt of notice from the Owner of the failure of any part of the systems during the guarantee period, the affected parts shall be replaced. Any equipment requiring excessive service shall be considered defective and shall be replaced.

1.12 COORDINATION

- A. Refer to DIVISION 1, General Conditions, for record drawings and procedures to be provided under this section, unless specifically noted otherwise in this section.
- B. Materials and apparatus shall be installed as fast as conditions of the building will permit and must be installed promptly when and as required.
- C. Confer with all other trades relative to location of all apparatus and equipment to be installed and select locations so as not to conflict with work of other Sections. Any conflicts shall be referred immediately to the Owner's Representative for decision to prevent delay in installation of work. All work and materials placed in violation of this clause shall be readjusted to the Owner's Representative's satisfaction at no expense to the Owner.
- D. Where work of this section will be installed in close proximity to work of other sections or where there is evidence that the work of this section may interfere with work of other sections, assist in working out space conditions to make satisfactory adjustment. Prepare and submit for approval 3/8" scale or larger working drawings and sections, clearly showing how the work is to be installed in relation to the work of other sections. If the work of this section is installed before coordinating with other trades or so as to cause interference with work of other trades, make changes necessary to protect conditions without extra charge.
- E. Keep fully informed as to the shape, size and position of all openings required for all apparatus, piping, ductwork, etc., and give information in advance to build openings into the work. Furnish all sleeves, pockets, supports and incidentals, and coordinate with the Owner's Representative for the proper setting of same.
- F. All distribution systems which require pitch or slope such as condensate drains and water piping shall have the right of way over those which do not.
- G. Make reasonable modifications in the work as required by structural interferences, interference with work of other trades, or for proper execution of the work without extra charge.
- H. Keep fully informed as to the size, shape and location of all openings required for the work of this Section and give full information to all Subcontractors and the Owner's Representative.

1.13 INSPECTION OF SITE CONDITIONS

- A. Prior to submission of bid, visit the site and review the related construction documents to determine the conditions under which the Work has to be performed. Send a report, in writing, to the Owner's Representative, noting any conditions which might adversely affect the Work of this Section of the Specifications.

1.14 SURVEY AND MEASUREMENTS

- A. Base all required measurements, horizontal and vertical, from referenced points established with the Owner's Representative and be responsible for correctly laying out the Work required under this Section of the Specification.
- B. In the event of discrepancy between actual measurements and those indicated, notify the Owner's Representative in writing and do not proceed with the related work until instructions have been issued.

1.15 DELIVERY, STORAGE AND HANDLING

- A. No materials shall be delivered or stored on site until Shop Drawings have been approved.
- B. All manufactured materials shall delivered to the site in original packages or containers bearing the manufacturer's labels and product identification.
- C. Protect materials against dampness. Store off floors, under cover, and adequately protected from damage.
- D. Inspect all equipment and materials, upon receipt at the job site, for damage and conformance to approved shop drawings.

1.16 PROTECTION OF WORK AND PROPERTY

- A. This Contractor shall be responsible for the care and protection of all work included under this Section until the completion and final acceptance of this Contract.
- B. Protect all equipment and materials from damage from all causes including, but not limited to, fire, vandalism and theft. All materials and equipment damaged or stolen shall be repaired or replaced with equal material or equipment at no additional cost to the Owner.
- C. Protect all equipment, outlets and openings with temporary plugs, caps and covers. Protect work and materials of other trades from damage that might be caused by work or workmen under this Section and make good damage thus caused.
- D. Damaged materials are to be removed from the site; no site storage of damaged materials will be allowed.

1.17 SUPERVISION

- A. Provide a competent Supervisor with a minimum of 5 years of experience in HVAC Construction Supervision who shall be in charge of the HVAC work at the site.

1.18 SAFETY PRECAUTIONS

- A. Life safety and accident prevention shall be a primary consideration. Comply with all of the safety requirements of the owner and OSHA throughout the entire construction period of the project.
- B. Furnish, place and maintain proper guards and any other necessary construction required to secure safety of life and property.

1.19 SCHEDULE

- A. Construct work in sequence under provisions of Division 1 and as coordinated with the Owner's Representative.

1.20 HOISTING, SCAFFOLDING AND PLANKING

- A. The work to be done under this Section of the Specifications shall include the furnishing, set-up and maintenance of all derricks, hoisting machinery, cranes, helicopters, scaffolds, staging and planking as required for the work.

1.21 CUTTING AND PATCHING

- A. Provide all cutting and patching necessary for the proper installation of work to be performed under this Section.
- B. All work shall be fully coordinated with all phases of construction, in order to minimize the requirements for cutting and patching.
- C. Form all chases or openings for the installation of the work of this Section of the specifications, or cut the same in existing work and see that all sleeves or forms are in the work and properly set in

ample time to prevent delays. Be responsible that all such chases, openings, and sleeves are located accurately and are of the proper size and shape and consult with the Owner's Representative and all trades concerned in reference to this work. Confine the cutting to the smallest extent possible consistent with the work to be done. In no case shall piers or structural members be cut without the approval of the Owner's Representative.

- D. Fit around, close up, repair, patch, and point around the work specified herein to match the existing adjacent surfaces and to the satisfaction of the Owner's Representative.
- E. Fill and patch all openings or holes left in the existing structures by the removal of existing equipment that is part of this Section of the Specifications.
- F. All of this work shall be carefully done by workmen qualified to do such work and with the proper and smallest tools applicable.
- G. Any cost caused by defective or ill-timed work required by this Section of the specifications shall be borne by the Subcontractor.
- H. When, in order to accommodate the work required under this Section of the specifications, finished materials of other trades must be cut or fitted, furnish the necessary drawings and information to the trades whose materials must be cut or fitted.

1.22 SLEEVES, INSERTS AND ANCHOR BOLTS

- A. Coordinate with other trades the location of and maintaining in proper positions, sleeves, inserts and anchor bolts to be supplied and/or set in place under this section of the specifications. In the event of incorrectly located preset sleeves, inserts and anchor bolts, etc., all required cutting and patching of finished work shall be done under this section of the specifications.
- B. All pipes passing through floors, walls, ceilings or partitions shall be provided with fire stopping to maintain the fire rating of the structure. All penetrations and associated fire stopping shall be installed in accordance with the fire stopping manufacturer's listed installation details. Provide sleeves for all penetrations where required by the listed detail, for the penetration of all mechanical room floors and where specifically required on the drawings.
- C. Field drilling (core drilling), when required, shall be performed under this section of the specifications, after receipt of approval by the Owner's Representative.
 - 1. When coring can not be avoided, provide ¼ inch pilot hole prior to coring. When coring through floor or slab, verify location of core on floor below and protect and piping, ductwork, wiring, furniture, personnel, etc., below the location of the core.

1.23 SUPPLEMENTARY STEEL, CHANNELS AND SUPPORTS

- A. Provide all supplementary steel, factory fabricated channels and supports required for proper installation, mounting and support of all equipment and systems provided under this section of the specification.
- B. Supplementary steel and factory fabricated channels shall be firmly connected to building construction in a manner approved by the Owner's Representative, as shown on the drawings, or hereinafter specified.
- C. The type and size of the supporting channels and supplementary steel provided under this section of the specifications shall be determined by the Subcontractor and shall be of sufficient strength and size to allow only a minimum deflection in conformance with the manufacturer's requirements for loading.
- D. All supplementary steel and factory fabricated channels shall be installed in a neat and workmanlike manner parallel to the walls, floors and ceiling construction. All turns shall be made with 90 degree and 45 degree fittings, as required to suit the construction and installation conditions.

- E. All supplementary steel including factory fabricated channels, supports and fittings shall be galvanized steel, aluminum, or stainless steel where exposed or subject to rust producing atmosphere and shall be manufactured by Unistrut, H-strut, Powerstrut, ERICO or approved equal.

1.24 HAZARDOUS MATERIALS

- A. Dispose of all hazardous materials in accordance with Federal and State laws. All handling shall conform to EPA requirements. A uniform hazardous waste manifest shall be prepared for all disposals and returned with all applicable signoffs prior to application for final payment. Provide breakout cost for this scope.
- B. Recovered refrigerant shall be recycled by a licensed facility approved by the Owner's Representative.
- C. Removed equipment or fluids containing any hazardous materials such as ethylene glycol, oil, mercury or chromate shall be recycled by a licensed facility approved by the Owner's Representative.
- D. Where it has been identified that asbestos-containing material exists within the scope limits, refer to the Asbestos Abatement specification section for requirements. Where insulation is removed, provide new insulation (types and thicknesses as specified in this section). Where scope is not defined, provide unit prices with bid for all pipe and duct sizes involved.

1.25 ACCESSIBILITY

- A. All work provided under this Section of the Specification shall be installed so that parts requiring periodic inspection, maintenance and repair are readily accessible. Work of this trade shall not infringe upon clearances required by equipment of other trades, especially code required clearances to electrical gear. Minor deviations from the drawings may be made to accomplish this, but changes of substantial magnitude shall not be made prior to written approval from the Owner's Representative.

1.26 WELDING QUALIFICATIONS

- A. Piping shall be welded in accordance with qualified procedures using performance qualified welders and welding operators. Procedures and welders shall be qualified in accordance with ASME BPV IX. Welding procedures qualified by others, and welders and welding operators qualified by another employer may be accepted as permitted by ASME B31.1. The Owner's Representative shall be notified 24 hours in advance of tests and the tests shall be performed at the work site if practicable. The welder or welding operator shall apply his assigned symbol near each weld he makes as a permanent record. Structural members shall be welded in accordance with Division 1
- B. A fire watchman with an approved fire extinguisher shall be posted at the site of the welding work, during that work, and for a minimum of 30 minutes after the work is completed, to see that sparks or drops of hot metal do not start fires.

1.27 PROJECT CLOSEOUT

- A. Construction Observations By The Engineer
 - 1. The engineer is contracted to make **1** progress site visits during construction, **one** Final inspection visit to determine if all work is complete.
 - 2. The Sub Contractor and the General Contractor are required to inspect their own work and make any corrections to the work to comply with the specifications and the contract documents. It is not the responsibility of the engineer to develop lists of incomplete work items.
 - 3. Progress Site Visits

- a. The purpose of the progress site visit by the engineer is to observe if the work is proceeding in accordance with the contract documents.
- b. The engineer will prepare a field report which will note in general the work completed since the last observation visit, work found not to be in accordance with the contract documents and work not corrected since the previous observation visit.

B. Engineers Construction Completion Certification

1. Where required by the applicable code, the Engineers Construction Completion Certification will be issued by RDK Engineers when all life safety and health related issues are complete, all required functional tests are complete and all reports are complete. The following is a minimum listing of the required systems to be tested with reports generated indicating they are complete and ready for use:
 - a. Pipe Pressure Tests
2. There shall be NO outstanding items identified on the punch list for scope within any of these categories.

C. Final Completion

1. The following items shall be submitted prior to the written request for Final completion:
 - a. Revised Substantial Completion items to be resubmitted in accordance with the review process comments.
 - b. Warranties commencing the date of Substantial completion
 - c. Individual Signed and dated Punch List acknowledging completion of all punch list items
2. When the Subcontractor considers all of the punch list work items complete, the subcontractor shall submit written notice through the General Contractor that all Punch List items are complete and resolved and the work is ready for final inspection. The signature lines for completion of each punch list item shall be signed by the Subcontractor indicating the work is complete and signed by the General contractor indicating s/he has inspected the work and found it to be complete. Should the Engineer find the work to be finally complete and all Punch List items are complete the Engineer will make a recommendation to the Architect or Owner. If the Engineer has found the punch list work to be incomplete during final inspection a written listing of the observed deficiencies will be prepared by the Engineer.
3. If the work is not fully complete then the engineer shall be reimbursed for his time to reobserve the work. A reobservation fee shall be charged to the subcontractor through the contractual agreement for any reobservations by the engineer.

D. Re-observation Fees

1. The re-observation fee shall be \$1200.00 per visit.

E. Subcontractor's Project Completion Certificate

1. Upon completion of work and prior to request for Certificate of Occupancy, the Subcontractor shall issue a certificate stating that work has been installed generally consistent with construction documents and all applicable codes. RDK Engineers can furnish a blank contractor's certificate form upon request. The certificate shall certify:
 - a. Execution of all work has been installed in accordance with the approved construction documents.

- b. Execution and control of all methods of construction was in a safe and satisfactory manner in accordance with all applicable local, state and federal statutes and regulations.
- 2. The certificate shall include the following information:
 - a. Project.
 - b. Permit Number.
 - c. Location.
 - d. Construction Documents.
 - e. Date on Plans and Specifications submitted for approval and issuance of the Building Permit.
 - f. Addendum(a) and Revision Dates.
- 3. The certificate shall be signed by the Subcontractor and include the following:
 - a. Signature.
 - b. Date.
 - c. Company.
 - d. License Number.
 - e. License Expiration Date.

PART 2 - PRODUCTS

2.00 NOT USED

2.01 PIPING AND FITTINGS

A. Fuel Oil Piping and Fittings

1. Above Grade - Single Wall:

- a. Piping: Seamless steel A53, A105, A120 or ERW A53E. Threaded joints shall be Schedule 80, welded joints shall be Schedule 40.
- b. Fittings: Steel, beveled butt-weld ends, ASTM A234, ANSI B169, same schedule as adjoining pipe, all elbows long radius, all interior surfaces smoothly contoured. Threaded fittings shall be malleable iron, 300 PSI Class, ASTM A47, or forged or rolled steel, ASTM A234.
- c. Unions: Malleable iron, 300 PSI Class, brass seat, ANSI B16.39, or 2,000 pound forged steel, ASTM A105.
- d. Joints: Welded for piping 2-1/2 inches and above, threaded or butt-welded for pipe 2 inches and below.
- e. Flanges: Forged steel welding neck, as specified for heating hot water system.

B. Gauge piping shall be copper tubing for steam and low temperature water.

C. Copper tubing shall conform to ASTM B 88, Type K or L. Tubing for compressed air tubing shall conform to ASTM B 251.

2.02 PIPE HANGERS AND SUPPORTS

- A. Hangers shall be as manufactured by Carpenter & Patterson, Inc., Grinnell Corporation, B-Line Systems, ERICO, or equal. Hangers shall transmit the load exclusively to the structure of the building. All hangers and supports to conform to MSS standards SP-58 and SP-69 and ANSI B 31.1.
- B. Hangers for all piping 4 inches and above shall be adjustable roll type. Hangers for piping below 4 inches shall be clevis type. Hangers for piping in tunnels on strut support frames shall be roller type, similar to Fig. B379 by B-Line Systems. Additionally, the first five (5) pipe hangers on both sides of all pump piping (suction and discharge) to be precompressed spring and double-deflection neoprene style, with 30° hanging rod swing capability, similar and equal in all respects to Mason Industries Model PC 30N, selected by manufacturer for anticipated loading and deflection.
- C. Provide all additional structural steel required for proper installation of hangers, anchors, guides and supports; hangers shall be arranged to maintain the required grading and pitch of piping, to prevent vibration and to provide for expansion and contraction.
- D. Maximum spacing of hangers and supports for steel pipe:

<u>Pipe Size (inches)</u>	<u>Max Spacing (feet)</u>
Up to 1	6
1¼-2½	9
3-6	12
- E. Reduce Steel pipe spacing to a maximum of 10', regardless of pipe, as necessary for fittings, valves, and other concentrated loads.
- F. Horizontal copper tubing shall have a maximum hanger spacing of 5' for tubing up to 1-¼" and 8' for 1½" and larger. Maximum spacing for PVC pipe hangers shall be 4'.
- G. Branch piping and runouts of over 5 feet shall have at least one hanger or support.
- H. At all copper piping, provide pipe supports with copper finish to eliminate the possibility of galvanic action.
- I. Furnish additional hangers or supports at vertical or horizontal changes of direction and at locations of concentrated loads due to valves, fittings, strainers, and accessories.
- J. Hangers and supports shall provide for 2" of vertical adjustments.

PART 3 - EXECUTION

3.00 DEMOLITION

- A. The existing facility will continue to operate during all phases of the demolition work and subsequent construction. No interruption of the systems will be permitted without prior approval of the Owner's Representative.
- B. Submit proposed methods and sequence of operations for the selective demolition work to the Owner's Representative for review prior to the start of the work.
- C. Perform all demolition while ensuring minimum interference with adjacent occupied areas.
- D. Where sections of a system are to be removed and the system serves other areas of the building that are outside the scope of the work, perform the following:
 - 1. Coordinate the temporary shut down of the system with the Owner's representative.

2. Install supports in the remaining active sections of the system as required by the removal of nearby supports associated with the demolition.
 3. Isolate the system.
 4. Cap the remaining system section, leaving the remainder of the system active.
- E. Provide temporary shoring or bracing during the demolition work to prevent movement, settlement, or collapse of the system or adjacent systems due to the work.
- F. Promptly repair any damage caused to adjacent facilities or areas that are designated to remain at no additional cost to the Owner.
- G. Equipment:
1. Coordinate with the Contractor and Subcontractors to provide disconnection prior to equipment removal.
 2. Remove equipment by unfastening at the supports or attachments. Then remove the attachments from the building, leaving no component of the original installation.
 3. The Owner shall choose to take possession of the equipment or not. If the Owner chooses not to take possession of the equipment, the Subcontractor shall remove the equipment and dispose of the equipment in accordance with Paragraph H specified below.
 4. Exercise care with equipment that is to be relocated or turned over to the Owner, examine the equipment before removal in the presence of the Owner's representative to determine its condition. Make a record of any marks, etc. by a photograph or videotape acknowledged by the Owner's representative.
 5. Install relocated equipment to ensure no damage.
 6. Equipment to be turned over to the Owner: Deliver to an on-site location designated by the Owner, and obtain acknowledgment of receipt in good condition.
- H. All equipment, etc., not turned over to the Owner shall be put into the General Contractor's dumpsters; become the property of the General Contractor, and shall be removed from the site by the General Contractor. For equipment containing any refrigerant, it shall be reclaimed for recycling. Any hazardous materials such as mercury from thermometers or thermostats; ethylene glycol; or lead shall be properly disposed of, following EPA guidelines.

3.01 GENERAL

- A. Install all items specified under PART 2 - PRODUCTS, according to the manufacturer's requirements and best quality recommendations, shop drawings, the details as shown on the Drawings and as specified in this specification section.
- B. Earthwork: Excavation and backfilling for tanks and piping shall be as specified in Section 02222 EXCAVATION.
- C. Install all work so that parts requiring inspection, replacements, maintenance and repair shall be readily accessible. Minor deviations from the Drawings may be made to accomplish this, but any substantial change shall not be made without prior written approval from the Owner.
- D. Equipment bases mounted on concrete slabs and pads, or mounted on stands, gratings, platforms, or other, shall not be set in any manner, except on the finished and permanent support.
- E. Support of equipment on studs or other means, and the placing or building of the supporting slab, pad, pier, stand, grating, or other "to the equipment", is prohibited.
- F. Concrete supporting structures shall have been constructed and cured a minimum of 14 days before equipment is mounted.

- G. All welding done under this section shall be performed by experienced welders in a neat and workmanlike manner. All welding done on piping, pressure vessels and structural steel under this Section shall be performed only by persons who are currently qualified in accordance with ANSI Code B31.1 for Pressure Piping and certified by the AWS, ASME or an approved independent testing laboratory, and each such welder shall present certificate attesting his/her qualifications to the Architect's representative whenever requested to do so on the job.
- H. All pipe welding shall be oxyacetylene or electric arc. High test welding rods suitable for the material to be welded shall be used throughout. All special fittings shall be carefully laid out and joints shall accurately match intersections. Care shall be exercised to prevent the occurrence of protruded weld metal into the pipe. All welds shall be of sound metal free from laps, cold shots, gas pockets, oxide inclusions and similar defects.
- I. All necessary precautions shall be taken to prevent fire or damage occurring as the result of welding operations.

3.02 BURIED PIPING INSTALLATION

A. Trench Preparation

- 1. Grade bottom of trench to provide a smooth, firm, stable, and rock-free foundation throughout the length of the piping.
- 2. Remove unstable, soft, and unsuitable materials where the pipes are to be laid and backfill with clean sand or pea gravel to indicated level.
- 3. Shape trench bottom to fit piping. Provide continuous level base using tamped sand backfill. Dig holes at each pipe joint to relieve the bells of all loads and to ensure continuous bearing of the pipe barrel on the trench base.

B. Buried Ductile Iron Pipe and Fitting Installation

- 1. Install ductile-iron restrained joints for all fittings and joint locations in accordance with manufacturers recommendations and AWWA C600. Keep in mind that there must be zero leakage.
- 2. Keep trench open until the piping has been tested so the pipe joints can be inspected for leakage.
- 3. Prior to installation, the Contractor shall field verify existing chilled water supply and return line locations and connections for tie-in purposes with the Owner's Representative present.
- 4. Mechanical joint AWWA butterfly valves installation shall comply with AWWA C600. Install buried valves with stem pointing up and with cast-iron valve box. Backfill and compact under and around valve box to ensure no vertical loads are transmitted to the valve operators or bonnets.
- 5. Apply full coat of asphalt or other acceptable corrosion-retarding material to surfaces of any exposed iron anchorage devices or as required for "touch-up" of parts of pipe where coating has been damaged.

C. Prefabricated Underground Piping

- 1. Buried pre-fabricated piping shall be installed and protected according to the manufacturer's best quality recommendations.

D. Installing Buried Piping

- 1. Pipe and accessories shall be handled carefully to assure a sound, undamaged condition. Care shall be taken not to damage coating when lowering pipe into a trench and when backfilling. Nonmetallic pipe shall be installed in accordance with pipe manufacturer's

instructions. Underground pipelines shall be laid with a minimum pitch of 1 inch per 50 feet. Horizontal sections shall have a minimum coverage of 36 inches for water and steam piping or 18 inches for fuel oil/diesel piping. Piping shall be free of traps. The full length of each section of underground pipe shall rest solidly on the pipe bed. Piping connections to equipment shall be as indicated, or as required, by the equipment manufacturer.

2. Underground tank connections shall be made with elbow swing joints [or flexible connectors] to allow for differential settlement. Threaded joints shall be made with tapered threads and shall be made perfectly tight with joint compound applied to the male threads only. This requirement shall not apply for the gauging hatch or similar connections directly over the tank where the line terminates in a fitting within a cast-iron manhole designed to allow for differential settling.
3. The interior of the pipe shall be thoroughly cleaned of all foreign matter before being lowered into the trench and shall be kept clean during installation. The pipe shall not be laid in water or when the trench or weather conditions are unsuitable. When work is not in progress, open ends of pipe and fittings shall be securely closed so that water, earth, or other substances cannot enter the pipe or fittings. Any pipe, fittings, or appurtenances found defective after installation shall be replaced.
4. Where steel piping is to be anchored, the pipe shall be welded to the structural steel member of the anchor and the abraded area shall be patched with protective coating or covering as specified. Piping passing through concrete or masonry construction shall be fitted with sleeves. Each sleeve shall be of sufficient length to pass through the entire thickness of the associated structural member and shall be large enough to provide a minimum clear distance of 1/2 inch between the pipe and sleeve, except where otherwise indicated. Sleeves through concrete may be 20 gauge metal, fiber, or other approved material. Sleeves shall be accurately located on center with the piping and shall be securely fastened in place. The space between the sleeves and the pipe shall be filled with mechanical link seal units designed for such use.

3.03 PIPING - GENERAL

- A. Piping shall be cut accurately to measurements established at the jobsite, shall be installed without cold springing, and shall properly clear windows, doors, and other openings. Cutting or other weakening of the building structure to facilitate piping installation will not be permitted. Piping shall be free of burrs, oil, grease, and other foreign matter. Piping shall be installed to permit free expansion and contraction without damaging building structure, pipe, joints, or hangers. Changes in direction shall be made with fittings. Vent pipes shall be carried through the roof and shall be properly flashed.
- B. Unless otherwise indicated, horizontal water piping shall pitch down in the direction of flow with a grade of not less than 1 inch in 40 feet, steam piping shall pitch down in direction of flow with a grade of not less than 1 inch in 20 feet, and steam condensate and condensate drain piping shall pitch down in direction of flow with a grade of not less than 1 inch in 10 feet. Open ends of pipelines and equipment shall be properly capped or plugged during installation to keep dirt or other foreign materials out of the systems. Pipe not otherwise specified shall be uncoated.
- C. Unless otherwise specified or shown, connections to equipment shall be made with malleable-iron unions for steel pipe 2 inches or less in diameter and with flanges or grooved joint couplings for pipe 2-1/2 inches or more in diameter. Unions for copper pipe or tubing shall be brass or bronze. Connections between ferrous piping and copper piping shall be electrically isolated from each other with dielectric couplings or other approved methods. Reducing fittings shall be used for changes in pipe sizes.
- D. Pipe Sleeves
 1. Pipes passing through concrete or masonry walls or concrete floors or roofs shall be provided with pipe sleeves fitted into place at the time of construction. A waterproofing

clamping flange shall be installed as indicated. Sleeves shall not be installed in structural members except where indicated or approved. Rectangular and square openings shall be as detailed. Each sleeve shall extend through its specified wall, floor, or roof, and shall be cut flush with each surface, except that sleeves through floors and roofs shall extend above the top surface at least 6 inches for proper flashing or finishing. Membrane clamping rings shall be provided where membranes are penetrated. Unless otherwise indicated or required by the sealing system, sleeves shall be sized to provide a minimum clearance of 1/4 inch between bare pipe and sleeves or between jacket over insulation and sleeves. Sleeves in bearing walls, waterproofing membrane floors, and wet areas shall be galvanized steel pipe. Sleeves in nonbearing walls, floors, or ceilings may be galvanized steel pipe or galvanized sheet metal with lock-type longitudinal seam. Except in pipe chases or interior walls, the annular space between pipe and sleeve or between jacket over insulation and sleeve in nonfire rated walls, partitions, and floors shall be sealed as indicated and specified. Metal jackets shall be provided over insulation passing through exterior walls, fire walls, fire partitions, floors, or roofs, shall not be thinner than 0.006 inch thick aluminum, if corrugated, and 0.16 inch thick aluminum, if smooth, and shall be secured with aluminum or stainless steel bands not less than 3/8 inch wide and not more than 8 inches apart. When penetrating roofs, before fitting the metal jacket into place, a 1/2-inch wide strip of sealant shall be run vertically along the inside of the longitudinal joint of the metal jacket from a point below the backup material to a minimum height of 36 inches above the roof.

2. If the pipe turns from vertical to horizontal, the sealant strip shall be run to a point just beyond the first elbow. When penetrating waterproofing membrane for floors, the metal jacket shall extend from a point below the backup material to a minimum distance of 2 inches above the flashing. For other areas, the metal jacket shall extend from a point below the backup material to a point 12 inches above floor; or when passing through walls above grade, jacket shall extend at least 4 inches beyond each side of the wall.

- a. **Pipes Passing through Waterproofing Membranes:** In addition to the pipe sleeves referred to above, pipes passing through roof or floor waterproofing membranes shall be provided with a 4 pound lead flashing or a 16 ounce copper flashing, each within an integral skirt or flange. Flashing shall be suitably formed, and the skirt or flange shall extend not less than 8 inches from the pipe and shall set over the roof or floor membrane in a troweled coating of bituminous cement. The flashing shall extend up the pipe a minimum of 10 inches above the roof or floor. The annular space between the flashing and the bare pipe or between the flashing and the metal-jacket-covered insulation shall be sealed as indicated. Pipes passing through roof or floor waterproofing membrane shall be installed through a galvanized steel sleeve. The annular space between pipe and sleeve or conduit and sleeve shall be sealed by a modular mechanical-type sealing assembly (equal to Link-Seal). The seals shall consist of interlocking synthetic rubber links shaped to continuously fill the annular space between the pipe/conduit and sleeve with corrosion protected carbon steel bolts, nuts, and pressure plates. The links shall be loosely assembled with bolts to form a continuous rubber belt around the pipe with a pressure plate under each bolt head and each nut. After the seal assembly is properly positioned in the sleeve, tightening of the bolts shall cause the rubber sealing elements to expand and provide a water-tight seal between the pipe/conduit and the sleeve. Each seal assembly shall be sized as recommended by the manufacturer to fit the pipe/conduit and sleeve involved. The Contractor shall provide sleeves of the proper diameters.

- b. **Optional Counterflashing:** As alternates to sealing the annular space between the pipe and flashing or metal-jacket-covered insulation and flashing, counterflashing may be accomplished by utilizing standard roof coupling with lead flashing sleeve for dry vents and turning the sleeve down into the pipe to form a waterproof joint; tack-welded or banded-metal rain shield around the pipe and sealing as indicated.

- E. Pipe joints between sections of pipe and fittings 2 inch and smaller shall be threaded or stainless steel press/crimp and fittings 2-1/2 inches and larger shall be either flanged or welded. Pipe and fittings 1-1/4 inches and larger installed in inaccessible conduits or trenches beneath concrete floor slabs shall be welded. Connections to equipment shall be made with black malleable-iron or stainless steel unions for pipe 2 inches or smaller in diameter, and with flanges or grooved joint couplings for pipe 2-1/2 inches or larger in diameter.
1. Threaded joints shall be made with tapered threads properly cut and shall be made perfectly tight with a stiff mixture of graphite and oil, or polytetrafluoroethylene tape or equal, applied to the male threads only, and in no case to the fittings.
 2. Welded joints shall be fusion welded in accordance with ASME B31.1, unless otherwise required. Changes in direction of piping shall be made with welding fittings only; mitering or notching pipe to form elbows and tees or other similar type construction will not be acceptable. Branch connections may be made with either welding tees or forged branch outlet fittings, either being acceptable without size limitation. Branch outlet fittings, where used, shall be forged, flared for improvement flow where attached to the run, reinforced against external strains, and designed to withstand full pipe bursting strength.
 - a. Beveling: Field and shop bevels shall be in accordance with the recognized standards and shall be done by mechanical means or flame cutting. Where beveling is done by flame cutting, surfaces shall be cleaned of scale and oxidation before welding.
 - b. Alignment: Before welding, the component parts to be welded shall be aligned so that no strain is placed on the weld when finally positioned. Height shall be so aligned that no part of the pipe wall is offset by more than 20 percent of the wall thickness. Flanges and branches shall be set true. This alignment shall be preserved during the welding operation. If tack welds are used, welds shall be of the same quality and made by the same procedure as the completed weld; otherwise, tack welds shall be removed during the final welding operation.
 - c. Erection: Where the temperature of the component parts being welded reaches 32 degrees F or lower, the material shall be heated to approximately 100 degrees F for a distance of 3 feet on each side of the weld before welding, and the weld shall be finished before the materials cool to 32 degrees F.
 - d. Defective Welding: Defective welds shall be removed and replaced. Repairing of defective welds shall be in accordance with ASME B31.1.
 - e. Electrodes: After filler metal has been removed from its original package it shall be protected or stored so that its characteristics or welding properties are not affected. Electrodes that have been wetted or that have lost any of their coating shall not be used.
 3. Flanges and unions shall be faced true, and made square and tight. Gaskets shall be nonasbestos compressed material in accordance with ASME B16.21, 1/16 inch thickness, full-face or self-centering flat ring type. The Gaskets shall contain aramid fibers bonded with styrene butadiene rubber (SBR) or nitrile butadiene rubber (NBR). NBR binder shall be used for hydrocarbon service. Union or flange joints shall be provided in each line immediately preceding the connection to each piece of equipment or material requiring maintenance such as coils, pumps, control valves, and other similar items.
 4. Flared and Sweated Pipe and Tubing: Pipe and tubing shall be cut square and burrs shall be removed. Both inside of fittings and outside of tubing shall be cleaned with an abrasive before sweating. Care shall be taken to prevent annealing of fittings and hard drawn tubing when making connection. Installation shall be made in accordance with the manufacturer's recommendations. Changes in direction of piping shall be made with flared or soldered fittings only. Solder and flux shall be lead free. Joints for soldered fittings shall be made with silver solder or 95:5 tin-antimony solder. Cored solder shall

not be used. Joints for flared fittings shall be of the compression pattern. Swing joints or offsets shall be provided on all branch connections, mains, and risers to provide for expansion and contraction forces without undue stress to the fittings or to short lengths of pipe or tubing.

END OF SECTION